Eng. Lib
Faton

GENERAL INDEX.

(Illustrated Subjects are Marked with an Asterisk after the Number of the Page.)

A

ABERDEEN Waterworks, Inauguration, 427
Abrasive Wheels. See *Grinding* under *Machine Tools*
Absorption Brake. See *Brake*
— Type Refrigerator, Electrolux, 75*
Abutment. See *Bridge*
Accelerating Relay, Field Regulator, Brookhirst Motor Starter, 181*
Accelerometer, Cambridge Two-Component Recording, 396*

Accidents :

Boiler Blow-Down Tank, Explosion of, 103
Chemical Industry, Report on Accidents, 414
Collieries, Accidents Due to Electrical Machinery, Report, 791. See 166
— Coal Dust and Firedamp Explosions, Research, 611. See 227
Colliery Explosions, Electrical Machinery, Prevention of Flame Propagation by Perforated Plates, 166
— — Ignition of Firedamp by Explosives, 227
Crane Accidents, Prevention, Home Office Action, 360
Dam, Dolgarrog, Failure of, Report, 484*. See 793
Explosions, Boiler. See *Boiler Explosion* and PARAGRAPH INDEX
— in Pulverised-Coal Plants, Report, 237
— Valve Chest, S.S. "Tuscanstar," 802
Industrial Accidents, Causes and Prevention, 289, 359, 574. See 433
— — Report of Inspector of Factories, 359. See 433
Locomotive Fumes, Fatal Accident from, in Swiss Tunnel, 556
Machinery Failures, Report on, 203
Motor-Car Breakdowns, Salvage Crane for 832*
Poisoning, Sulphuretted-Hydrogen, Texas Oilfields, 610
Railway Accident, Bishop's Stortford, Report, 268
— British, Accident Statistics, 421
— London and North Eastern, Electric Train Collision, Manors Junction, Newcastle, 544
— Tunnel, Swiss, Fatal Accident from Locomotive Fumes, 556
Shipping Lost, Lloyd's Statistics, 145, 327, 616, 817
Steam-Heating Pipe, Failure of, 387
Street Accidents, Reduction of, Work of National Safety First Association, 574
"Accra," M.S., Trials, 437
Accumulators, Electric. See *Electric*
— Hydraulic, Pneumatically-Loaded, for Forging Press, 550
— Steam, Ruth's, Chemical Plant Exhibition, 145; Combination of Steam and Water-Power Plants, 379
Acetylene Generator, Safety, Welding and Cutting Plants, 691*
— Welding. See *Welding*
Acid-Resisting Materials for Chemical Plant, 112, 144
— Sulphuric, Effect in Fatigue Tests, Steel, 807*
— — Manufacture, Research in, 414
— — Position of Industry, 129
Acoustic Generator, Air Jet, Dr. J. Hartmann's, 256
— Photography of Sound Waves in Air, 638*. See 667*
— Properties of Human Ear, 606
— of Public Buildings, 605*, 638*, 667*. See 114
— Ripple-Tank Method, Investigations of Sound Waves, 114, 638*
— Sound Absorption by Building Materials 639*. See 114, 236, 668*
— — Production and Measurement, 605*
— — Proof Partitions, Floors and Ceilings, 668*. See 114, 236, 639*
— — Reverberations in Rooms, 639. See 667
— — Transmission and Absorption by Partitions, 114, 236. See 639*, 668*
Acoustic Work of National Physical Laboratory, 113
Activated Sludge. See *Sewage*
Adams, C. A., on Welding of Iron and Steel, 629
Adcock, F., on Effect of Nitrogen on Chromium and Iron-Chromium Alloys, 308*
Address, Presidential. See *Presidential Address*
Adiabatic Index, Steam, Determination, 640*, 681. See 712
Admiralty Method of Echo Sounding, 792
— and Status of Naval Engineers, 18, 132
— See also *Warships*
"Adventure," H.M. Mine-Laying Cruiser, 790
Aerial Mapping. See *Aeronautics*
— Masts, Rugby Wireless Station, 279*
— Navigation. See *Aeronautics*
— Propellers. See *Propellers* under *Aeronautics*
— Ropeway. See *Wire Ropeway*
— Surveying. See *Aeronautics*
— Transport. See *Aeronautics*
Aerodynamics. See *Aeronautics*
Aeroflex Cartridge Fuses, 693*
Aeronautical Society, Royal, Supply of Aero Engine Fuels, by Col. the Master of Sempill, 485. See 802; Reception of Sir A. Cobham, 542; Hydrogen as Auxiliary Fuel in Oil Engines, by G. F. Mucklow, 685; Aero-Engine Valve Steels, by P. B. Henshaw, 698; Magnesium and its Alloys, by W. R. D. Jones, 714

Aeronautics :

Aerial Mapping of Burmese Forests, 360, See 595, 777
Aerodynamics Department, National Physical Laboratory, Work of, 34*
— Fluid Flow round Rotating Cylinder, 34*
Aerofoils, Air Flow in Wake, Report, 766
— Pressure Distribution and Heat Losses, 34
Aeronautical Research Committee, Report, 237; Report on Strength of Alpax, 485; Report on Slip in Repeated-Stress Tests, 516; Report on Age Hardening of Y Alloy, 605. See LETTER, 731; Hydrogen as Auxiliary Fuel in Solid-Injection Oil Engine, 685; Report, Air Flow in Wake of Aerofoil, 766
Aeroplane, Agricultural and Industrial Uses, 776
— Carrying Ship, "Lexington," United States Navy, Launching Arrangements, 737*, 770*
— De Havilland Hercules, Air Route to Egypt and India, 820
— Design, Report of Aeronautical Research Committee, 237
— Economic Flight Conditions, 35
— Electric Generator for, Brooks-Sayers System, 434*
— Models, Wind-Channel Tests, 34*
— Photographic Mapping, Burmese Forests, 360. See 595, 777
— — Surveying from, Development, 595, 777; Williamson Camera for, 595*
— Service to Egypt and India, 820
— Use for Forest Fire Fighting, 777
— Wings, Air Flow in Wake of, 766
— — Pressure Distribution and Heat Losses, 34
— See also *Seaplane* (below)
Air Fleets, German Pocket Book (Review), 240
— Flow in Wake of Aerofoil, Report, 766
— Ministry Research Department, Development of Rotating-Wing Aircraft, 207, 246*; Development of Compression-Ignition Engine, 207, 277*
— — Vacancies for Aircraft Apprentices, 167
Aircraft Carrier "Lexington," United States Navy, Launching Arrangements, 737*, 770*
— Rotating-Wing Type, 35, 207, 246*
Airscrews, National Physical Laboratory Investigations, 35
Airship, Metal-Clad, for United States Navy, 806
— Mooring Mast at Detroit, 807
Autogiro Flying Machine, Cierva, 207, 246*; Wind-Channel Tests, 35

Aeronautics—*continued.*

Aviation, German Pocket Book (Review), 240
— German Year Book (Review), 270
Cierva Autogiro Flying Machine, 207, 246*; Wind-Channel Tests, 35
Civil Aviation, Air Service to Egypt and India, 820
Engines, Oil, Development of Compression-Ignition Type, 207, 277*
— Petrol, Aeroplane, Alloy Steels for Valves, 698
— — Aeroplane, Report on Research, 237
— — Aeroplane, Supply of Fuel for, 485. See 802
Floats, Seaplane, Development in United States Navy, 705*
Flying Machine, Cierva Autogiro, 207, 246*; Wind-Channel Tests, 35
Generator, Electric, for Aircraft, Brooks-Sayers System, 434*
German Aviation Pocket Book (Review), 240
— — Year Book (Review), 270
Imperial Airways, Ltd., Air Service to Egypt and India, 820
— College, Department of Aeronautics-Prospectus, 478
Metal-Clad Airship, United States Navy, 806
Mooring Mast, Airship, at Detroit, 807
Pitot Tubes, National Physical Laboratory Investigations, 34
Rotating-Wing Type of Aircraft, 207, 246.* See 35
Royal Air Force Cadetships, 357
Seaplane Floats, Development in United States Navy, 705*
— Hulls and Floats, Tank Experiments, 35, 237. See 705*
— Research, Proposed Experimental Tank, 237
Surveying, Aerial, Development, 595, 777; Williamson Camera for, 595*
— —Mapping of Burmese Forests, 360. See 595, 777
Wind-Channel Experiments, Wind Pressures on Buildings, 268
— — Manometric Balance for, 34
— — Tests, Aeroplane Models, 34*
See also PARAGRAPH INDEX
Aeroplanes. See *Aeronautics*
Afforestation, National, and Small Holdings, 290
— Saw Mills for Small Timber Growers, 348
Africa, East, Trade of, Report, 172
"Africstar," Blue Star Liner, Trials, 766
Age Hardening, Aluminium-Nickel Alloys, 345
— — Y Alloy, Report, 605. See LETTER, 731
Aggregation, Molecular, and Kinetic Theory of Gases, 701
Agreements, Labour. See *Labour*
Agricultural Engineering, Institute of, Report on Artificial Drying of Crops, 591
— Hall. See *Exhibition*
— Machinery, Import and Export Trade, 607*
— Motors. See *Engines; Motors; Tractors*
— Show, Reading, 52*, 81*
— — Smithfield Club, 732*
— Tractors. See *Tractors*
Agriculture, Electric Ploughing Plant, 206, 211*. See 423, 447.
— Engineering Applications, 12
— Potato Digging Machines, 85*, 86*, 766*
— Small Holdings and Afforestation, 290
— Use of Aircraft in, 776
— — of Electricity in, 206, 211*, 423, 447
— — of Sewage Sludge on Land, 50
— See also *Irrigation* and PARAGRAPH INDEX
Ahmedabad, Ferro-Concrete Arch Retaining Wall, 464*
Ailsa Shipbuilding Company, Ltd., Trials of M.Y. "Chelsea," 103; Launch of S.S. "Moyallon," 164
Air, Compressed. See *Compressed Air; Pneumatic*
— Compressors for Colliery Work, British Flottmann Drill Co., Ltd., 693
— — Three-Stage, Belliss & Morcom Diesel Engine, 627*
— — Turbo and Reciprocating, Uses of, 549
— — Werkspoor Marine Oil Engine, Tests, 769, 801
Air Ejector for Condensers, C. A. Parsons & Co., Ltd., 717*
— Elutriation, Laws of, 773
— Fleets, German Pocket Book (Review), 240
— Flow in Mines, Calculation and Measurement, 58*, 122*
— Heating Stove, Domestic and Workshop Use, 331
— Jet Acoustic Generator, Dr. J. Hartmanns', 256
— Lift Pumping, Applications, 549, 550
— Ministry Research Department, Development of Rotating-Wing Aircraft, 207, 246*; Development of Compression-Ignition Engine, 207, 277*
— — Vacancies for Aircraft Apprentices, 167
— Pump. See *Pump*
— Resistance of Express Trains (Review), 777
— Sand Process of Coal Cleaning, 120
— Screws. See *Propellers* under *Aeronautics*
— Smoke Pollution and Public Health, 746
— Temperature and Humidity in Factories, 102
— Waves Round Rifle Bullets in Flight, 657*. See 490*
— See also *Atmosphere*
Aircraft Carriers. See *Aeronautics*
Aircraft Development Company, Metal-Clad Airship, 806
— See *Aeronautics*
Airships. See *Aeronautics*
Ajax-Northrup High-Frequency Induction Furnace, 50
Albert Dock, Royal, Ferry Boat with Gill Hydraulic Propeller, 167*
Alberta, National Gas and Petroleum in, Report, 396
"Alcantara," M.S., Launch, 418
Alcohol Motor Fuels, Experiences with, 130
Aldington, H. E., on Road Construction and Safety, 697
Alignment in Machine Tool Practice, 647*, 676*
Alkali Works, Report on, 414
Allen, W. H., the Late, 332*. See 531
Allis-Chalmers Manufacturing Co., Hydraulic Turbines, Isle Maligne Power Station, 747*
Allison, V. C., on Explosibility of Coal Dust, 121
Alloys. See *Metallurgy; Microphotographs*; and PARAGRAPH INDEX
"Almeda," S.S., Blue Star Line, Launch, 12
Alpax Aluminium Alloy, Production and Properties, 319, 341*. See 336*, 458*, 485, 492*; Tests at High and Low Temperatures, 485
Alpha Particles, Collisions with Light Atoms, 254. See *Erratum* 304
Alternating Current. See *Electric*
— Stress. See *Tests (Materials)*
Alternators. See *Generators, Electric; Turbo-Generators*
Aluminium Alloys. See *Alloys* under *Metallurgy*
— Corporation, Dolgarrog Dam Disaster, Report, 484*. See 793
— Protection from Corrosion by Anodic Oxidation, 208, 274*
— Single Crystals, Behaviour under Reversed Torsional Stresses, 4, 320, 422. See 516
— Vessels, Chemical Plant Exhibition, 144, 579
— See also *Metallurgy; Metal-Price Diagrams*
Ambler, H. R., on Gas Absorption in Steel, 678
"Ambrosio," S.S., Shallow-Draught Oil Tanker, Trials, 137
American Arch Co., Inc., Suspended Open-Hearth Furnace Roof, 494
— Institute of Mining and Metallurgical Engineers. See *Mining*
— Iron and Steel Institute. See *Iron and Steel Institute, American*
— Locomotive Co., Locomotive for Union Pacific Railroad 291*, 413*, 519*, 598*
— Navy. See *United States* under *Warships*
— Railroad Association, Safety of British Railroads, by C. F. Carter, 421
— Society of Civil Engineers. See *Civil Engineers*
— — of Mechanical Engineers. See *Mechanical Engineers*
— — of Naval Architects and Marine Engineers. See *Naval Architects*
— See also *United States*
Amsler, A. J., & Co., Torsion Testing Machine for Fine Wires, 679*; Depth Indicator for Brinell Tests, 784*

Analysis, Organic, Use of Hydrogenation, 288
Anderson, A. C., on Mechanical Parts of Winding Engines, 671
Anderson, Boyes & Co., Ltd., Coal Cutters, 693
Andrew, Prof. J. H., on Cause of Temper-Brittleness, 553*, 582*
Angles, A., on Restriction of Output, 290
"Anglo-Peruvian," S.S., Trials, 240
Anglo-Saxon Petroleum Co., Ltd., M.S. "Patella," 510
Anido Slide Rule, 312
Annealing, Glass, Physics and Economics of, 609
— See also *Heat Treatment* under *Metallurgy*
Annual, Brassey's Naval and Shipping, 1927 (Review), 810
— Publications. See LITERATURE INDEX
Annular Waterways, Frictional Resistance of, 111. See LETTERS, 168 (*Erratum*, 292), 303, 352
Anodic Oxidation Process, Protection of Aluminium from Corrosion, 208, 274*
Anrep Peat Excavator and Macerator, 500
Antimony Prices. See *Metal-Price Diagrams*
Antwerp Meeting, Institution of Naval Architects. See *Naval Architects*
— Port of, Docks and Extensions, 7, 24*, 51
"Apapa," M.S., Launch of, 304
Apparatus, Electric, Treatise on (Review), 439
Apples, Refrigerated Transport of, 205. See LETTER, 303
Appointments, Engineering, and Membership of Institution of Civil Engineers, 545, 579
— See PARAGRAPH INDEX
Apprentices, Training Centre for, Gas Light & Coke Co., 724
— See also *Education*
Aquafier for Conditioning Wheat, 27*
Aqueduct, Inverted-Syphon Section, San Francisco Water Supply, 621*
— Tunnel, San Francisco Water Supply, Construction, 284*, 411, 621*. See 64*
Arapuni Hydro-Electric Power Station, 794
Arc. See *Electric ; Furnace ; Welding*
Arch Bridge, Ferro-Concrete, with Cast-Iron Reinforcement, Gmünden, Austria, 622*
— Dam, Early Intake Diversion, San Francisco Water Supply, 219*, 283*
— — Experimental, Stevenson Creek, California, Tests, 562*
— Ferro-Concrete Road Bridge, Caversham, 343*
— Gaines, for Locomotive Fireboxes, 519*
— Retaining Wall, Ferro-Concrete, Ahmedabad, 464*
Archbutt, S. L., Report on Age Hardening of Y Alloy, 605. See LETTER, 731
Archdale, J., & Co., Ltd., Gang Drilling Machines, 380*
Architects, Naval. See *Naval Architects*
Armament. See *Guns ; Warships*
Armco Iron, High-Temperature Tests, 4
Armour-Piercing Projectiles, Hadfields, Ltd., 722*. See 728
— Plate Manufacture, History of, 728. See 722*
Armoured Ships. See *Warships*
Armstrong, Whitworth & Co., Ltd., Trials of M.S. "Beljeanne," 326 ; Equipment for New Zealand Water Power Plants, 794*
Arsenical Copper Tubes, Season Cracking of, 320, 365*
Art and Science in Human Progress, 235
Arterial Roads. See *Roads*
Artesian Wells. See *Wells*
Artificial Drying, Crops in Stacks, 591
— Silk, Drying and Conditioning Machines, 659*
— — Manufacture from Spruce Pulp, 782
Arts, Royal Society of, Recent Experiments on Properties of Steam at High Pressures, by Prof. H. L. Callendar, 649*, 681,* 712*
Ash Composition, and Uses of Coal, 121, 408
Ashdown Rotoscope, High Speed Shutter, 686
Asphalt Plant, 14-ton Ransome, 131*
— Road Construction, 373. See 411
Asquith, Wm. (1920), Ltd., Drilling Machines for Sydney Harbour Bridge, 164*
Assaying, Chelsea Polytechnic Classes, 326
Associated Daimler Co., Ltd., Motor Vehicle for Street Watering, &c., 523*
Associated Equipment Co., Electric Trolley 'Bus for Bradford, 282
Associated Manufacturers Co. (London), Ltd., Automatic Belt-Tensioning Drive, 733*
Association, British. See *British Association*
— Engineering. See *Institutions*
Asynchronous-Synchronous Motors. See *Motors, Electric*
Ateliers Réunis, Forplex Pulveriser, 295*
Atherton, Prof. D. H., on Friction in Annular Waterways, 111. See LETTERS, 168 (*Erratum*, 292), 303, 352
Atkinson, R. d'E., on Light Emission from Atoms, 255
Atlantic Liners. See *Steamers*
Atmosphere, Heaviside Layer effect in Wireless Telegraphy, 443*, 487
Atmospheric Conditions and Index of Comfort in Factories, 290
— Corrosion. See *Corrosion*
— Electricity, Fundamental Problems, 764
— Pollution, Chemical Industry, 414
— — and Public Health, 746
Atomic Structure and Gyro-Magnetic Electrons, 225
Atoms, Light, Collisions of Alpha Particles with, 254. See *Erratum*, 304
— — Emission from, 255
Audenshaw, Explosion of Feed-Water Pipe, 456
Augst Hydro-Electric Power Station, 334
Aurora, Spectrum of, 20
Austenite in Steel, Direct Change to Troostite, 371*
Australia, Burrinjuck Dam, Murrambidgee River, Flood Conditions, 168
— Coaling Transporter at Bowen, 5*
— Institution of Engineers. See *Engineers*
— Manufacturing Policy, 160*
— Sydney Harbour Bridge Contract, Testing Machine, 134* ; Drilling Machines, 164*
Australia, Sydney Suburban Railway Electrification, 432*
— Tariff Amendments, 264
— and United States, Work and Wages in, 160*
— Western, Mineral Resources, 640
Austria, Gmünden Ferro-Concrete Bridge, 622*
— Water Power Development and Inland Navigation, 362
Austrian Railway Electrification, 425
— Warships, Ventilation of Turbine Rooms, 285*, 345*
Autogenous Welding. See *Welds* and *Welding*
Autogiro Flying Machine, Cierva, 207, 346* ; Wind-Channel Tests, 35
Automatic Coupler, Majex M.C.B. Type, Transition Device, 631*
— Machine Tools. See *Machine Tools*
— Sector Sluices, Diversion Dam, San Francisco Water Supply, 220*, 283*
— Signalling. See *Signalling*
— Stokers. See *Stokers*
— Substation. See *Substation*
Automobile Engineers, Institution of, Presidential Address by H. K. Thomas, on the Debt of the Community to the Automobile, 451 ; Award of Premiums, 578 ; Training Schemes, 600 ; Annual Dinner, 633 ; Hydrogen asAuxiliary Fuel in Oil Engines, by G.F. Mucklow, 685 ; Optical Indicators, by Prof. W. Morgan and A. A. Rubbra, 727
Automobiles. See *Motor-Cars*
Auto-Pneumatic Water Supply, Bruston System, 454*
Auto-Welding Engineering Co., Ltd., Macleod Petrol Pump, 552*
Auxiliary Machinery, Marine. See *Marine*
Avery, W. & T., Ltd., 1,250-ton Universal Testing Machine, 134* ; Hopper Weighing Machine for Coal, 653*
Aviation. See *Aeronautics*
Awbery, J. H., on Latent Heat of Fusion of Metals, 13
Axially Symmetric Functions, Stationary Value, 610
Axle Boxes, Locomotive for Union Pacific Railroad, 598*
— Locomotive, Grinding Machine, 400*
— Motor-Car. See *Motor-Car Details*

B.

BABCOCK & WILCOX, LTD., Boiler Plant Walton Pumping Station, 42* ; Buel Pulverised-Fuel System, 813*
Bäckström, H., on Heat Conduction in Steel, 306*. See 302
Baclé, L., on Armour Plate Manufacture, 728. See 722*
Bacteria, Sulphur, Detection of Sewage Pollution in Water by, 223, 231*
Baffle Piston, Internal-Combustion Engines, 304*
Balance, Manometric, for Wind Channels, 34
— Torsion, Eötvös, 101*
Balanced Manometer, Measurement of Air Velocity in Mines, 122*. See 59*
— Valves, Larner-Johnson, O'Shaughnessy Dam, San Francisco Water Supply, 96*
Baldwin Locomotive Works, Diesel-Electric Locomotive, 150*
Bâle Inland Navigation and Water Power Exhibition, 173
— World Power Conference. See *World Power Conference*
Balfour, Lord, on Industrial Research, 112
Ball Bearings. See *Bearings*
— Hardness Tests. See *Hardness* under *Tests (Materials)*
Ballast Water, Oil Separators for, 7, 28*, 384*. See LETTERS, 72, 132, 209, 241
Ballistics, Photography of Bullets in Flight, 490*, 657*
Balloons, Use for Prevention of Petrol Evaporation, 5
Bamfords, Ltd., 10-h.p. Oil Engine, 83*
Band Conveyors. See *Conveyors*
— Saws. See *Saws* under *Machine Tools*
Bar-Type Coal Cutter, British Flottmann Drill Co., Ltd., 693
"Barbara," M.S., Rotor System, Trials, 427
Barclay, Curle & Co., Ltd., Trials of M.S. "Storsten," 288 ; Trials of S.S. "Rajula," 816
Barford & Perkins, Ltd., Grinding and Crushing Mill, 86*
Barking Power Station, Explosion of Valve Chest, 617
Barton, Capt. F. R., on Nickel Coinage, 345
Barton Power Station, 41,000-kw. Turbo-Generator, 513
Basic Open-Hearth Process, Steel Manufacture, Data, 13
Baskets, Centrifugal Machines, Corrosion and Erosion, 113
Basra, Wireless Telephony Equipment, 272
Bath, Sludge-Digestion Plant, 81
Bats, Mosquitoes and Dollars (Review), 144
Batteries. See *Electric*
Battleships. See *Warships*
Baynes & Co., Jet-Tube Ventilators, 516
Beale, A., on Oil Separators for Bilge and Ballast Water, 28*. See 7. See LETTERS, 72, 132, 209, 241
Beams, Continuous, Bending Moments and Deflections, Calculation, 63*
— Steel, Overstraining of Material in Bending, 743*
— System, Wireless Telegraphy. See *Telegraphy, Wireless*
Bean Cars, Ltd., 18-50-h.p. Motor-Car, 503*
Bear Mountain Bridge, Hudson River, Cable Construction, 803*
Bearings, Ball, Manufacture of, and the Motor-Car Industry, 452
— — Rollers for Belt Conveyors, 717*
— — Single Row, Design of, 127*
— Lubrication, Graphical Study of, 141
— — National Physical Laboratory Investigations, 3
— Main and Crank Axle, Locomotive for Union Pacific Railroad, 598*
Bearings, Michell Thrust and Radial, 20,000-kw. Turbo-Generator, 467*
— Roller, Belt-Conveyor Rollers, 651*. See *Erratum*, 724
— Winding Engines, Design and Lubrication, 672
Bechuanaland, Kalahari Desert, Report on Irrigation, 269
Beckton Gas Works, Coal-Handling Plant, 589*, 650*. See *Erratum*, 724
Becontree Housing Scheme, L.C.C., Building-Construction Methods, 140, 249
Belgian Meeting, Institute of Metals. See *Metals, Institute of*
— — Institution of Naval Architects. See *Naval Architects*
Belgium, Liége District, Development of Zinc Industry, 318
— Water Power Development and Inland Navigation, 362
"Beljeanne," M.S., Trials, 326
Bell, A. L., on H.M. Dockyard, Rosyth, 596
Belliss & Morcom, Ltd., Steam Turbines, Walton Pumping Station, 42* ; 600-h.p. Diesel Engine, 626*
Belmont Reservoir, Repair Work, 793
Belt Conveyors. See *Conveyors*
— Tensioning Drive, Automatic, Wearn's, 733*
Bending Moments and Deflections, Continuous Girders, Calculation, 63*
— Steel Beams, Overstraining of Material, 743*
— Tests. See *Tests (Materials)*
Bends, Pipe, Elastic Deformation of, 821
Benedicks, Prof. C., on Heat Conduction in Steel, 306*. See 302 ; on Electro-chemical Potentials of Steel, 430*
Benevolent Society, Metal Trades, 575
Bengough, Dr. G. D., on Protection of Aluminium from Corrosion, 274*. See 208
Bennett, W., on Corrosion of Ship Plates and Rivets, 796*
Bennis, E., & Co., Ltd., Tests of Hand and Mechanical Stoking, 691
Berginisation of Fish-Liver Oils, 764
Berthelot Centenary Celebrations, 174
Beryllium, Preparation and Properties, 68, 673*. See *Errata* 725
Bethlehem Shipbuilding Corporation, Launching Arrangements, U.S. Aircraft Carrier "Lexington," 737*, 770*
Bettington Coal Pulveriser, 715
Bevel Roller Feed for Band Saw, 640*
Biles, Sir J., Comparisons of Steam Turbines and Diesel Engines, for Ship Propulsion, 17. See *Erratum*, 37. "Wolf" Experiments, Longitudinal Strength of Ships, 191*, 251*
Bilge Water, Oil Separators for, 7, 28*, 384*. See LETTERS, 72, 132, 209, 241
Billingham Synthetic Ammonia Works, Pulverised Fuel Plant and Boilers, 381*. See LETTER, 443
Binary Alloys. See *Alloys* under *Metallurgy*
Binding Machine, Agricultural (Ruston & Hornsby, Ltd.), 732*
Bingham, Miss K. E., on Aluminium-Nickel Alloys, 345
Binnie, D., on Overstraining of Steel by Bending, 743*
Biplanes. See *Aeronautics*
Birmingham Gas Department, Operation of Vertical Retorts, 407
Birmingham Railway Carriage and Wagon Co., Ltd., Sleeping Car, 751*, 785*
— Smoke Abatement Exhibition and Congress, 331
— U.S., Production of Low-Phosphorus Pig Iron, 631
Birthday Honours List, 50
Bishop's Stortford Railway Accident, Report, 268
Bituminous Materials, Road Construction. See *Roads* and *Tar*
Blackstone & Co., Ltd., Exhibits at Reading Agricultural Show, 85 ; Oil Engines, Burnt Fen Drainage Scheme, 612*
Blades, Turbine, Conical Arrangement of, 1
Blading, 20,000-kw. Impulse-Reaction Type Turbo-Generator, Bradford, 467*
Blake-Denison Automatic Weigher for Belt Conveyor, 652*
Blast Furnaces. See *Furnaces*
Blasting, Rock, Construction of Isle Maligne Power Station, 750
Bleeding, Multi-Stage, for Feed Heating, 61
Blohm & Voss, 15,000-h.p. M.A.N. Diesel Engine Set, Hamburg, 117* ; Trials, 555*
Blow-Down Tank, Boiler, Explosion of, 103
— Pipe, Gas (Buck & Ryan), 390
— — See also *Welding*
Blue Star Line (1920), Ltd., Launch of S.S. "Almeda," 12 ; Trials of S.S. "Stuartstar," 517
Board of Trade Reports, Boiler Explosions. See *Boiler Explosions*
— — See also *Overseas Trade Department*
Boat, Flying. See *Seaplane* under *Aeronautics*.
— Motor. See *Motor Boat*
— Submarine. See *Warships*
Bodmin Station, Beam System Wireless Telegraphy, 528*. See 515, 543, 587
Boeke & Huidekoper, Potato Digging Machine, 86*
Bogie, Four-Wheeled Leading, with Roller Centring Device, Locomotive for Union Pacific Railroad, 598*
— — Wheeled, Sleeping Car for International Sleeping Car Co., Ltd., 786*. See 751*
— Two-Wheeled Trailing, Locomotive for Union Pacific Railroad, 598*
— See also *Trucks*
Boiler Blow-Down Tank, Explosion of, 103
— Construction, Riveted and Welded Joints in, 489
— Electrically-Heated, Experiments on Properties of Steam, 712*
— Exhaust-Heated, for Marine Oil Engine, 761*
— Explosion, British Brass Fittings, Ltd., 414
— — British Xylonite Company's Works, 617
— — Caldercruix Paper Mills, 414
— — Clayton Boiler, Confectionery Works, 702
— — Hartley Bank and Manton Collieries, 245
Boiler Explosion, S.S. "Ennerdale," "Inanda" and "Plodder," 372
— — Traction Engine, 802
— Feed Pump. See *Pump*
— — Water Softening. See *Water Softening*
— — Water. See *Water*
— Firing, Hand and Mechanical Stokers, Comparative Tests, 691
— — Pulverised Fuel. See *Pulverised Fuel*
— Furnaces. See *Furnace* and *Stoker*
— House Equipment, Smoke Abatement Exhibition, 331
— — Walton Pumping Station, Metropolitan Water Board, 42*
— Locomotive, Three Pressures (Henschel & Sohn), 198*. See *Erratum*, 231
— — for Union Pacific Railroad, 519*
— — See also *Locomotive*
— Marine, Naval Practice, Development of Oil Firing, 736
— — Water-Tube, Maintenance of, 737
— Oil Firing of, Memorandum of Manchester Steam Users' Association, 667
— Scale Prevention, Filtrator Process, 415*
— Steam, Rating of, in United States, 268
— — Report of Swiss Association of Users, 62
— Tubes, Corrosion, Effect of Segregation, 19
— Water-Tube, Thompson, Pulverised-Fuel Equipment, Billingham Synthetic Ammonia Works, 381*
— — Tube, Woodeson Type, Pulverised Smokeless-Fuel Firing, 720*
— — Tube, Yarrow High-Pressure Type, S.S. "King George V," 322*
— See also *Engines and Boilers* in PARAGRAPH INDEX
Bollengier, K., on the Port of Antwerp, 24*. See 7, 51
Bolometer, Rapid Acting, Metal Sputtered on Thin Films, 676
Bolton & Partners, Ltd., Buell Pulverised-Fuel System, 813*
Bolton Water Supply, Belmont Reservoir, Repair Work, 793
Bombay Harbour Construction Work, 566. See 573
— Water Supply, Tansa Completion Works, 314*
Bone Drying and Degreasing Machine, Explosion, 702
Books, New, Notes on, 16, 71, 260, 415, 472, 517, 659, 687, 720. See LITERATURE INDEX
— Received, 14, 76, 106, 136, 168, 200, 232, 264, 296, 326, 356, 386, 418, 448, 478, 508, 538, 570, 600, 632, 662, 724, 756, 786, 816
Booth, J., & Bros., Ltd., Battery Mine Locomotive, 145
Bore Holes. See *Wells*
Boring Machine. See *Machine Tools*
Born, Prof. M., on Electron Collisions, 225
Boscheron, L., on the Liége Zinc Industry, 318
Botley, C. F., on the Gas Industry, 391
Bottles, Glass, Parison Moulds for Manufacture, 823
Boulogne Consistency Test, Cement, Comparison with other Tests, 821
Bournemouth Gas and Water Co., Poole Gas Works, Coal-Handling Plant, 779*
Bowen, Queensland, Coaling Transporter at, 5*
Bowie, Dr. J., A., on Coal and Co-Partnership, 289
Boxer Indemnity, Use for Education, 209
Bradford Corporation, Electric Trolley 'Bus for, 292 ; Valley Road Power Station, 20,000-kw. Turbine, 465*
— Technical College, Prospectus, 326
Bragg, Prof. W. L., on X-Ray Crystal Analysis, 255
Bragg, Sir W., Demonstration of Crystal Models, 256
Braithwaite, W., & Co. (Engineers), Ltd., Tansa Completion Works, 314*
Brake, Eddy-Current, Brookhirst Motor-Starting Panels, 180*
— Electric, Types and Characteristics, 435*
— Hydraulic Turbine Tests, Verkstaden Kristinehamn, 375*
— Hand, Little Giant Compound-Leverage Type, 263*
— Motor-Car. See *Motor-Car Details*
— Wheels, Temperature Stresses in, 93
— See also *Dynamometer*
Brandon Pumping Station, Burnt Fen Drainage Scheme, 612*
Brass Bars and Sections, Standard Specifications, 97
— Cast, Interpretation of Macrostructure, 88*
— Corrosion of. See *Corrosion*
Brassey's Naval and Shipping Annual, 1927 (Review), 810
Brazing Solder, Standard Specification, 357
Breakdown Crane. See *Crane*
— See *Accidents*
Brewer's Exhibition, Royal Agricultural Hall, 579
Bricks, Fire. See *Refractory Materials*
Bridge, Ferro-Concrete Arch, with Cast-Iron Reinforcement, Gmünden, Austria, 622*
— — Concrete Arch, at Caversham, 343*
— — Concrete, Italian (Review), 438
— Indian Railway Systems, 567, 573. See *Erratum*, 600
— Members, 1,250-ton Testing Machine, 134*
— for Pipe Line, Bombay Water Supply, 315* Bay Crossing, San Francisco Water Supply, 685*
— Proposed, over River Thames, London, 754*, 760. See LETTER, 825
— Suspension, Bear Mountain, Hudson River, Cable Construction, 803*
— — Long-Span, Estimates of Quantities and Costs, 819, 827*
— Sydney Harbour, Testing Machine for Members, 134* ; Drilling Machines, 164*
— Waterloo, London, Proposed Widening, 760
— See also PARAGRAPH INDEX
Bridgwater Receiving Station, Beam Wireless Telegraphy, 531*. See 515, 543, 587
Brighton, Portslade Gas Works, Reconstruction, 392

Brighton Technical College, Prospectus, 326
Brinell Tests. See *Hardness* under *Tests* (*Materials*)
Bristol University Prospectus, 177

British Association (Oxford Meeting):
Preliminary Announcement and Programme, 76
Presidential Address by H.R.H. the Prince of Wales, on the Value of Science, 171. See 175
Preliminary Proceedings, 175
Concluding Remarks, 349
Section G.—Engineering:—
Programme, 76
Reports of Discussions, 205, 222
Presidential Address, by Sir J. F. C. Snell on the Development of Electricity Supply, 194. See 206
Some Engineering Problems in Connection with the Refrigerated Transport of Apples, by Dr. E. Griffiths and E. A. Griffiths, 205. See LETTER, 303
Small Refrigerating Plants, by Prof. C. M. Jenkin, 205
The Carbonic Acid Refrigerator and the Cooling of the Working Fluid, by Prof. E. H. Lamb, 206
Production of Motor Cars, by A. A. Rouse, 206
Economics of Electrical Distribution, by J. M. Kennedy, 214*. See 206
Electric Ploughing, by R. B. Matthews, 211*. See 206, 423
Some Phenomena of Electric Conduction, by Prof. W. Cramp, 207
The Rotating Wing in Aircraft, by H. E. Wimperis, 246*. See 207
The High-Duty Compression-Ignition Engine, by D. R. Pye, 277*. See 207
Protection of Aluminium and its Alloys against Corrosion by Anodic Oxidation, by Dr. G. D. Bengough and H. Sutton, 274*. See 208
Effect of a Constant Torsional Stress upon Specimens Subjected to Repeated-Bending Stresses, by Prof. F. C. Lea and Dr. H. P. Budgen, 242*. See 222
Stress Concentration Produced by Fillets and Holes, by S. Timoshenko, 222
Microscopic Determination of the Strength and Durability of Building Stones, by E. Morton, 401*. See 223
Influence of Voltage Harmonics on Power-Factor Correction by Condensers, by Dr. E. Hughes, 216*. See 223
Lewis Evans Collection of Ancient Scientific Instruments, 223
Sulphur Bacteria as Indicators of Polluted Waters, by Prof. D. Ellis, 231*. See 223
B. E. S. A. Glossary of Electrical Engineering Terms, by Prof. G. W. O. Howe, 245. See 223. See LETTER, 395
Distribution of Pressure in Impulse Steam Turbines at Varying Loads, by W. J. Kearton, 365*. See 224
Fatigue Tests of Cast Iron, by Prof. C. H. Bulleid, 429*. See 224
Classification of Patent Specifications, by Dr. A. P. Thurston, 224
Demonstration of Kinetic Elutriation Apparatus, 225
Section A.—Mathematical and Physical Science:—
Programme, 76
Reports of Discussions, 225, 254
Presidential Address, by Prof. A. Fowler on Line Spectra, 225
Mechanics of Electron Collisions, by Prof. M. Born, 225
The Gyro-Magnetic Electron and a Classical Theory of Atomic Structure and Radiation, by Prof. P. V. King, 225
Collision of Alpha Particles with Light Atoms, by Sir E. Rutherford, 254. See *Erratum*, 304
Directions of Electrons Emitted in Photo-Electric and Compton Effects, by Prof. W. Wien, 255
Asymmetry of Stark-Effect Lines, by Prof. W. Wien, 255
Mechanism of Light Emission from Atoms, by R. d'E. Atkinson, 255
Energy Transference in Collisions between Electrons and Molecules, by Prof. J. S. Townsend, 255
Transformation of Elements by Low-Voltage Discharges, by W. W. Garrett, 255
Quantitative Methods in X-ray Crystal Analysis, by Prof. W. L. Bragg, 255
Forces between Ions in a Crystal, by Dr. J. E. Lennard-Jones, 256
Crystal Models, by Sir W. Bragg, 256
Report on Local Variations of the Earth's Gravitational Field, 256
Air-Jet Acoustic Generator, by Dr. J. Hartmann, 256
Hygroscopic Properties of Colloidal Fibres, by Dr. S. G. Barker, H. R. Hirst, and A. T. King, 256
Report of Committee on Seismological Investigations, 256
Work of the British Solar-Eclipse Expedition, Sumatra, 1926, 257
Our Coming Eclipse, by Prof. H. H. Turner, 257
Ether-Drift Experiments, by Prof. D. C. Miller, 257. See 67
Joint Discussion with Section B, on the Mechanism of Homogeneous Chemical Reactions, 288
Section B.—Chemistry:—
Programme, 76
Reports of Discussions, 257, 288
Presidential Address by Dr. J. F. Thorpe, on the Scope of Organic Chemistry, 257

British Association (Oxford Meeting)— *continued.*
Joint Discussion with Section A, on the Mechanism of Homogeneous Chemical Reactions, 288
Use of Hydrogenation in Organic Analysis, by Prof. H. ter Meulen, 288
Hydrolysis by Light Polarised by Small Particles, by Miss E. S. Semmens, 289
Union of Mercury and Helium, by J. J. Manley, 289
Chemistry of Fine Grinding and Fine Powders, by Dr. G. Martin, 289
Section F.—Economic Science and Statistics:—
Economic Aspects of the Labour Outlook, by Sir L. Macassey, 289
Coal and Co-partnership, by Dr. J. A. Bowie, 289
Section J.—Psychology:—
Observations on Accidents in Industry, by A. Stephenson, 289
Restriction of Output, by A. Angles, 290
Index of Comfort and Atmospheric Conditions, by Dr. H. M. Vernon, 290
Section K.—Botany:—
Dangers of Forest Destruction in the Tropics, by T. F. Chipp, 290
Sub-Section K.—Forestry:—*
Presidential Address by Lord Clinton on Small Holdings and Afforestation, 290
Financial Aspects in Forest Economy, by A. C. Forbes, 290
Financial Return from Scots and Corsican Pines, by W. E. Hiley, 347
Seasoning of Timber, by S. T. Stillwell, 347
Application of Timber Testing, by C. J. Chaplin, 347. See *Erratum*, 516
Timber and its Uses, by Sir J. Calder, 347
Estate Saw Mills, by Col. G. Leather, 348
Underwood and its Uses, by Major F. H. T. Jervoise, 348
Forestry from a Business Point of View, by L. S. Wood, 348
Irrigated Forest Plantations in the Punjab, by R. M. Gorrie, 348
Section L.—Education:—
Sciences and Humanities, by Prof. C. H. Desch, 348
Joint Discussion with Section M, on Educational Training for Overseas Life, 349
Wireless Education, by Dr. J. C. Stobart, 349
Educational Possibilities of Films, by Dr. C. W. Kimmins and G. T. Hankin, 349
Section M.—Agriculture:—
Joint Discussion with Section L, on Educational Training for Overseas Life, 349
British Brass Fittings, Ltd., Boiler Explosion, 414
British Broadcasting Co., Educational Work, 349
— Chemical Plant, Exhibition of, 144. See 80, 112, 129
— Columbia, Esquimalt, Caissons for Dry Dock, 593*
— — Tadanac, 400-ft. Concrete Chimney, 35*
— Commercial Gas Association, Annual Conference, 575
— Electrical and Allied Industries Research Association, Investigations of Properties of Steam at High Pressures, 649*, 681*, 712*
— — and Allied Manufacturers' Association, Annual Dinner, 667; Trade Survey, 702
— Empire, Co-ordination of Research Work, 665
— Engine, Boiler and Electrical Insurance Co., Ltd., Report on Machinery Failures, 203
— Engineering Standards Association. See *Engineering Standards*
— Engineers Association, Report on Engineering industry, 607*
British Ensign Motors, Ltd., Gillett Motor Car, 565
British Flottmann Drill Co., Ltd., Coal Cutter and Air Compressors, 693
British and Foreign Lime and Power Corporation, Ltd., Combined Gas Producer and Lime Kiln, 447*
"British Governor," Oil Tanker, Trials, 624
British Guiana, Sluice Provision for Tidal Drainage, 682*
British Hart-Parr Co., Hoover Potato Digger, 766*.
British India Steam Navigation Co., Ltd., S.S. "Rohna," 265; S.S. "Rajula," 816
— Industries, Economic Position, American Investigations, 512
"British Inventor," Oil Tanker, Trials, 233
— Navy. See *H.M.* under *Warships*
— Railways. See *Railways*
— Shipbuilding. See *Shipbuilding*
— Shipping. See *Shipping*
British Steel Piling Co., Ltd., Concrete Mixer, 718*
British Thomson-Houston Co., Ltd., High-Tension Direct-Current Generators, Rugby Wireless Station, 147*; Magneto Manufacture, 444*; 5,000 kw. Turbo-Generator, Norwich Power Station, 576*
— Trade. See *Trade*
British Xylonite Company's Works, Boiler Explosion, 617
Bronze Worm-Gear Blanks, Production by Centrifugal Casting, 320, 338*. See LETTERS, 395, 443
Brooke, J. W., & Co., Ltd., Portable Pumping Set, 427
Brookhirst Switchgear, Ltd., Voltage Control on Loaded Distributors, 54; Motor Starters for Small Powers, 179*
Brooks, H. W., on Turbulent Combustion of Pulverised Fuel, 267
Brooks-Sayers Electric Generator for Aircraft, 434*
Broom & Wade, Ltd., Compressed-Air Motor, Colliery Haulage Gears, 689*
Brown, F. W., on Main Sewer Design, 81
Brown Coal, German, Occurrence, Working and Treatment, 744
Brussels Meeting, Institution of Naval Architects. See *Naval Architects*
Bruston Auto-Pneumatic Water-Supply System, 454*
Buck & Hickman, Ltd., Fay & Egan Co.'s Woodworking Machines, 230*; Pratt & Whitney Surface Grinder, 305*
Buck & Ryan Gas Blow Pipe, 390
Bucket Conveyor. See *Conveyor*
— Excavator, Sauerman Cable-Suspension System, 717*
Buckeye Steel Castings Co., Majex Coupler Transition Device, 631*
Budgen, Dr. H. P., on Combined Torsional and Repeated-Bending Stresses, 242*. See 222
Buell Pulverised-Fuel Burning System, 813*
Buffer Coupling, Majex, Transition Device, 631*
Buildings, Acoustic Properties of, Investigations by Ripple Tank, 114, 638*
— Construction Methods, Comparisons, L.C.C. Housing Schemes, 140, 249
— — Sound Proof Partitions, Floors and Ceilings, 668*. See 114, 236, 639*
— — Sound Transmission and Absorption by Partitions, 114, 236. See 639*, 668*
— — See also *Ferro-Concrete* and PARAGRAPH INDEX
— Effect of Santa Barbara and St. Lawrence Earthquakes, 482
— Electrical Equipment Regulations, 516
— Materials, Sound Absorption by, 639*. See 114, 236, 668*
— Mechanics (Review), 176
— Miami, Florida, Hurricane Damage, 711
— Public, Acoustics of, 605*, 638*, 667*. See 114
— Regulations, Factory and Workshop Act, 121
— Research Committee, Investigations of Permeability of Concrete, 617; Determination of Free Lime in Hydraulic Cement, 705*; Report on Cement Consistency Tests, 821
— Steel-Framed, Corrosion of Steelwork, 631
— Stones, Microscopical Investigations, 223, 401*
— Wind Pressures on, Experiments on Models, 268
Bulk Cargoes (Review), 526
Bulkhead, Timber and Concrete, Western Electric Co.'s Telephone Works, 188*, 253*
Bulleid, Prof. C. H., on Fatigue Tests of Cast Iron, 429*. See 224
Bullers, Ltd., Aerial Insulators, Rugby Wireless Station, 231*
Bullets, Photography in Flight, 490*. See 657*
— Rifle, in Flight, Air Waves Round, 657*, See 490*
Bunker, Coal, Ferro-Concrete, Beckton Gas Works, 652*. See 589*
Bureau of Mines. See *United States*
— of Shipping. See *United States*
— of Standards. See *United States*
Burmeister & Wain Type Diesel Engines, M.S. "Carnarvon Castle," 21*
Burmese Forests, Aerial Mapping of, 360. See 595, 777
Burners, Pulverised Fuel, Lopulco System, 546*; Buell System, 814*
Burning Refractory Materials, 385
Burnt Fen Drainage Scheme, 612*
Burrinjuck Dam, Murrumbidgee River, Flood Conditions, 168
Butterley Co., Ltd., Pressed-Steel Pit Trams, 692*
Butterworth, W., on the Work of the Society of Glass Technology, 704

C.

CABLE Construction, Bear Mountain Suspension Bridge, Hudson River, 803*
— Laying Steamer "Dominia," Trials, 227
— See also *Wire Ropes* and *Electric*
Cableway. See *Wire Ropeway*
Cadmium-Zinc Alloys, Constitution and Properties, 614*
Cairo Motor Car Exhibition, 300
Caissons, Floating, Esquimalt Dry Dock, 593*
— Sickness, Helium-Oxygen Mixtures for Preventing, 678
Calculating Machines, South Kensington Museum, 657
Calcutta Harbour Construction Work, 566. See 573
Calder, Sir J., on Timber and Its Uses, 347
Caldercruix Paper Mills, Boiler Explosion, 414
Calender Explosion, Willesden Laundry, 414
California, Combined Steam and Hydraulic Power Plants, 80
— Gas Making and Fuel Problems in, 709
— San Francisco, Hetch-Hetchy Water Supply 63*, 94*, 219,* 283*, 410*, 497*, 621*, 683*
— Santa Barbara Earthquake, Effects of, 482
— Stevenson Creek, Experimental Arch Dam, Tests on, 562*
Callendar, Prof. H. L., on Properties of Steam at High Pressures, 649*, 681* 712*
Calorific Values, Net and Gross, of Fuels, 678
Calorimeter, Throttling, Differential, Determination of Specific Heat of Steam, 681*
Calvert, Dr. H. C., on the Activated Sludge Process, 49. See LETTER, 115
Cambridge Instrument Co., Ltd., Pendulum Apparatus for Gravity Determination, 271*; Two-Component Recording Accelerometer, 396; Pyrometers for Surface Temperature Measurements, 507*; Recorder for Dissolved Oxygen in Feed Water, 610*; Illuminated Dial CO Indicator 786
Camera, Williamson, for Aerial Surveying, 595*
Cammell Laird & Co., Ltd., Launch of S.S. "Almeda," 12
Canada, British Columbia, Caissons for Esquimalt Dry Dock, 593*
Canada, British Columbia, Concrete Chimney at Tadanac, 35*
— Isle Maligne Power Plant, Construction, 747*
— Northern Alberta, Natural Gas and Petroleum in, Report, 396
— St. Lawrence Earthquake, Effects, 482
— and United States, Exchange of Electric Power, 377
Canadian Lignite, Moisture Contents, 431
— Peat, Manufacture and Uses, Report, 500
— Wireless-Beam Telegraphy Service, 528*. See 515, 543, 587
Canal, Hydraulic Phenomena of Movable Weirs, 54*, 701
— Panama, Tonnage Measurement in (Review), 38
— Proposed, Bâle-Strasburg, 173, 174. See 334
— Towing Vessels for, 363
— See also PARAGRAPH INDEX
Candy Filters, Metropolitan Water Board, Walton, 9*
Cannon Street Station, Remodelling of, 721
Capacity. See *Electric*
"Cape York," M.S., Report on Diesel-Engine Trials, 761*, 767*, 781, 799
Capital and Labour. See *Labour*
Carbon Dioxide Indicator, Cambridge, Illuminated Dial, 786
— — Refrigerators, Cooling of Working Fluid, 206
— Solid, Theory of Combustion, 730
Carbonisation, Coal, Gas Manufacture, Influence of Size, 392. See *Erratum*, 409; Influence of Coal Constituents, 405
— — Vertical Retorts, Birmingham Gas Department, 407
— Holmside Coal, in Vertical Retorts, 1*. See LETTERS, 72, 133
— Low and High Temperature, Production of Smokeless Fuel, 131. See LETTERS 241, 271. See also 166.
— Processes, Fuels from, 640
Carburettor Jets, Tests, National Physical Laboratory, 4
Carburisation. See *Heat Treatment* under *Metallurgy*
Cardiff Engineering Exhibition, 688*, 715*
Cargo Steamers. See *Steamers*
Cargoes, Bulk (Review), 526
Carlton Pipe Joint Co., Ltd., Flexible Pipe Joint, 692*
"Carnarvon Castle," Union-Castle Motor Liner, 21*
Carriage, L. & N.E. Railway, Accelerometer Experiments, 396*
— Railway, Sleeping, International Sleeping Car Co., Ltd., 751*, 785*
— Road, Cowan's Early Steam, Experience with, 543
"Carronwater," Dredger, Launch of, 357
Cars, Motor. See *Motor Cars*
Carter, C. F., on the Safety of British Railways, 421
— Disc Separator for Wheat, 26
Cartridge Fuses, Aeroflex, 693*
Case-Hardened Rings, Distortion of, 470*
— Hardening. See *Heat Treatment* under *Metallurgy*
Cast Iron, Fatigue Tests of, 429*. See 224
— — Flanges, Gas Pipes, &c., Standard Table, 667
— — Metallurgy of (Review), 656
— — Refinement by Shaking, Deschesne Process, 249*
— — Reinforcement, Cast-Iron-Concrete Arch Bridge, 622*
— Metals, Interpretation of Macrostructure, 88*
Casting, Centrifugal Process, Production of Bronze Worm-Gear Blanks, 320, 338*. See LETTERS 395, 443.
— Weakening Effect of Ribs, 204
Catalogues, 15, 59, 91, 152, 185, 218, 248, 282, 342, 372, 434, 464, 494, 556, 586, 741, 802, 832. See PARAGRAPH INDEX
Catch, Runaway, for Mine Tubs, 232
Caterpillar-Tractor. See *Tractor*
Cattley Accumulator Co., Ltd., Accumulator for Miners' Lamps, 688
Cavallier, C., the Late, 200
Caversham, Ferro-Concrete Road Bridge, 343*
Cavitation in Hydraulic Turbines, Model Investigations, 407, 439*
Ceilings and Floors, Sound Proof, 668*
Celite, Use in Concrete, 501. See *Erratum*, 538
Cells. See *Electric*
Celluloid Models, Stress Determination by. See *Optical*
Cement Consistency Tests, Report on, 821
— Hydraulic, Determination of Free Lime, 705*
— Kilns, Refractory Linings for, 386
— Portland, Blast-Furnace, Standard Specifications, 383
— Testing Machines, Sheffield University, 50
— See also *Concrete* and PARAGRAPH INDEX
Cementation Process, Shaft Sinking, 719
— See also *Heat Treatment* under *Metallurgy*
Census of Road Traffic, 412, 604
Central-Buffer Coupling, Majex, Transition Device, 631*
— Marine Engine Works, Trials of S.S. "Otterpool," 210
— Station. See *Power Station*
Centrifugal Casting Process, Production of Bronze Worm-Gear Blanks, 320, 338*. See LETTERS, 395, 443
— Machines, Corrosion and Erosion of Baskets, 113
— — for Flour Dressing, 91
— Pumps. See *Pumps*
Ceramic Society (Refractory Materials Section), Refractories in the Gas Industry, by W. T. Gardner, 352. See 408; Influence of Iron Oxide in Promoting Inversion of Silica, by W. J. Rees, 385; Drying and Burning of Refractory Materials, by F. West and J. W. Fagan, 385; Refractory Linings for Cement Kilns, by Dr. G. Martin, 386; Influence of Foreign Matter on the Thermal Expansion and Transformation of Silica, by J. F. L. Wood, Dr. H. S. Houldsworth, and Prof. J. W. Cobb, 386

Ceretti & Tanfani, S. A., Wire Ropeway for Coal-Handling, 779*
Cerium, Molybdenum, and Related Alloy Steels (Review), 98
Certificates, National, Mechanical Engineering, Progress of Scheme, 759. See 792, 825
— — in Naval Architecture, 106, 694
Chain Conveyor, Redler, for Flour Mills, 91*
— Pipe-Wrench, Vulcan, 68
— Track Tractor. See *Tractor*
— Type Coal Cutter, (Mavor & Coulson, Ltd.), 693*
— Wrought Iron, Heat Treatment of, 4
Chamberlain, N., on Engineers and Public Health, 48
Chance, T. M., on a Sand-Flotation Plant for Coal Cleaning, 120
Change-Speed Gear. See *Gear; Motor-Car Details*
Channon, H. J., on the Berginisation of Fish-Liver Oils, 764
Chaplin, C. J., on Timber Testing, 347. See *Erratum*, 516
Charing Cross Electricity Supply Co., Ltd., Automatic Substation, 485*
— — Proposed High-Level Bridge, 755*, 760. See LETTER, 825
— — Station, Remodelling of, 721
"Chelsea," Motor Yacht, Trials, 103*
Chelsea Polytechnic, Classes in Metallurgy and Assaying, 326
Chemical Analysis. See *Analysis*
— Composition and Crystalline Form (Review), 98
Chemical Engineering and Wilton's Patent Furnace Co., Ltd., Steam-Jet Furnace, 691*
— Engineers, Institution of, Annual Report, 74; Presidential Address by Sir F. Nathan on Elimination of Industrial Waste, 112; Recording Torsion Dynamometer, by R. G. Parker and D. N. Jackman, 764*; Statistical Methods in Relation to Industrial Efficiency, by D. Rider and T. C. Finlayson, 765; Statistics in Industry: Some Uses and Limitations, by H. C. Marris, 773; Researches on the Laws of Air Elutriation, by Dr. G. Martin, 773; Refrigeration in the Chemical Industry, by H. M. Dunkerley, 773
— Industries, Monopolies of Raw Materials, 129
— Industry, Refrigeration in, 773
— — Society of, Congress of Chemists and Chemical Plant Exhibition, 80, 112, 129, 144; (Chemical Engineering Group), Vulcanisation and Moulding of Rubber Articles, by H. Willshaw, 721
— Plant, British, Exhibition of, 144. See 80, 112, 129
— — Control by Statistical Methods, 765. See 773
— — Corrosion-Resisting Materials, 112, 144
— — Lead for, 113
— Reactions, Homogeneous, Mechanism of, British Association Discussion, 288
— Societies, Proposed Joint House, 129
— Solutions, Effect in Fatigue Tests, 807*
Chemistry, Artificial Silk, Manufacture from Spruce Pulp, 782
— Berthelot Centenary Celebrations, 174
— of Corrosion. See *Corrosion*
— of Fine Grinding, 289
— Glycerol Manufacture (Review), 438
— Helium, Combination with Mercury, 289
— Hydrolysis by Polarised Light, 289
— Linseed Oil, Extraction by Solvents, 131
— Organic Analysis, Use of Hydrogenation, 288
— — Scope of, 257
— Production of Sugar from Sawdust, 130. See 144
— Sulphuric-Acid Industry, Position of, 129
— Transmutation of Elements by Low-Voltage Currents, 255
— See also PARAGRAPH INDEX
Chemists, Congress of, London, 80, 112, 129. See 144
Chile, Industrial and Economic Situation, Report, 110
Chimney, Ferro-Concrete, 400-ft., Tadanac, B.C., 35*
China, Boxer Indemnity, Use for Education, 209
— Shanghai Public Works Department, Report, 121
Chipp, T. F., on Forest Destruction in Tropical Countries, 290
Chlorine Water-Sterilising Plant, Metropolitan Water Board, Walton, 10*
Chorlton, F. O. L., Constant-Speed and Variable-Speed Governors, 87*
Chromium and Iron-Chromium Alloys, Effect of Nitrogen, 308*
— Steels, Electrochemical Potentials, 430*
Chronometers, Testing at National Physical Laboratory, 127
Churchill, C., & Co., Ltd., Rule for Internal Measurements, 233
Churchill Machine Tool Co., Ltd., Locomotive-Axle Grinding Machine, 400*
Cierva Autogiro Flying Machine, 207, 246*; Wind-Channel Tests, 35
Cinematograph. See *Kinematograph*
Circular Saws. See *Saws* under *Machine Tools*
Circulating Pumps. See *Pumps*
— Water, Film-Type Cooling Towers, 719
— — Tunnel, Construction, Western Electric Co.'s Telephone Works, 188*
City and Guilds of London Institute, Prospectus, 326
— — Engineering College, Goldsmiths' Company Extension, 543
"City of Bath," S.S., Trials, 8
"City of Oxford," S.S., Launch, 185; Trials, 757
Civil Aerial Transport. See *Aeronautics*
— Engineers, American Society of, Quantities and Costs for Long-Span Suspension Bridges, by J. A. L. Waddell, 827*. See 819
— Engineers, French Society of (British Section), Award of Grand Prix to L. A. Legros, 141; Industrial Fatigue, by L. A. Legros, 481; History of Armour Plate Manufacture, by L. Baclé, 728. See 729*

Civil Engineers, Institution of:
Report on Research on Deterioration of Structures in Sea Water, 300
Award of Kelvin Medal to Sir C. A. Parsons, 478, 543
Premiums and Awards, 488
James Forrest Lecture, by Senatore G. Marconi, on Radio Communications, 543, 587
Engineering Appointments and Membership of Institution, 545, 579
Presidential Address, by F. Palmer, on Indian Engineering, 566, 613. See 573, 600
H.M. Dockyard, Rosyth, by T. B. Hunter and A. L. Bell, 596
Mechanical Parts of Large Winding Engines, by P. R. Roberts and A. C. Anderson, 671
Remodelling of Charing Cross and Cannon Street Stations, by G. Ellson, 721
Civil Servants, Professional, Institution of, Annual Dinner, 640
Civilisation, Positions of Science and Art in, 235
Clarke, C. W. E., on Steam Power Stations, 61
Clarke, Chapman & Co., Ltd., Woodeson Boiler using Pulverised Smokeless Fuel, 720*
Classification of Patent Specifications, 224
— Steam and Electric Locomotive Characteristics, 666, 669, 674*, 813
Clay Cross, Water Supply of, 46
— Fire. See *Refractory Materials*
Clayton Boiler Explosion, Confectionery Works, 702
Cleaning Wheat, Modern Machinery for, 26*, 55*
Cleveland Bridge and Engineering Co., Ltd., Floating Landing Stage, Seacombe Ferry, 557*
— Iron Prices. See *Metal-Price Diagrams*
— and the Northern Counties, Notes from, 14, 45, 77, 107, 137, 169, 201, 232, 264, 296, 327, 356, 386, 418, 449, 479, 508, 538, 570, 600, 632, 662, 694, 724, 756, 786, 816. See PARAGRAPH INDEX
Clews Peterson Piston Ring and Engineering Co., Ltd., Clupet Piston Ring, 587
Clifford, W., on the Use of Sewage Sludge on Land, 50
Clinton, Lord, on Small Holdings and Afforestation, 290
Clupet Piston Ring, 587
Clutch, Friction, Humphrey-Sandberg Inclined-Roller Type, 646*
— for Large Winding Engines, 671
— See also *Motor-Car Details*
Clydach Works, Mond Nickel Co., Ltd., Buell Pulverised-Fuel System, 813*
Clyde Estuary, Sand Blackening, Investigations by Sulphur Bacteria, 223, 231*
— Passenger Steamer "King George V," 321*
CO_2. See *Carbon Dioxide*
Coaches, Railway. See *Carriages*
Coad-Pryor, E. A., on Glass Annealing, 609
Coal Ash, Composition and Uses of, 121, 408
— Bituminous, Low-Temperature Carbonisation, 746
— Brown, German, Occurrence, Working and Treatment, 744
— Bunker, Ferro-Concrete, Beckton Gas Works, 652*. See 589*
— Carbonisation, Gas Manufacture, Influence of Size, 392. See *Erratum*, 409; Influence of Ash Constituents, 408
— — Processes, Fuels from, 640
— — Vertical Retorts, Birmingham Gas Department, 407
— Cleaning, Air-Sand Process, 120
— Consumption and Grate Area, Locomotives, 666, 669, 813. See 674
— — See also *Trials*
— Cutter, Bar Type, Compressed Air (British Flottmann Drill Co., Ltd.), 693
— — Chain Type, Compressed Air or Electric (Mavor & Coulson, Ltd.), 693*
— — Compressed Air and Electric (Anderson, Boyes & Co., Ltd.), 693
— Dispute. See under *Labour*
— Draper Hydraulic Separator for, 719
— Dust, Explosibility of, 39, 121, 611
— Economy. See also *Fuel Economy; Pulverised Coal*
— Gas. See *Gas*
— Grading, Electro-Magnetic Vibrating Screen, 690*; Mechanical Vibrating Screen, 716*
— Handling Plant, Beckton Gas Works, 589*, 650*. See *Erratum*, 724
— — Plant, Fulham Gas Works, 103*
— — Plant, Port Talbot, Great Western Railway, 162*
— — Plant, Wire Ropeway and Transporter, Poole and Pitwines Gas Works, 779*
— Holmside, Carbonisation, in Vertical Retorts, 1*. See LETTERS, 72, 133
— Industry, Co-Partnership in, 289
— Liquid Fuel Production from, 423
— Low and High Temperature Carbonisation, Production of Smokeless Fuel, 131. See LETTERS, 241, 271. See also 166
— — and High-Temperature Carbonisation, Work of Greenwich Research Station, 166. See 131
— — Temperature Carbonisation, Tests of Fusion Rotary Retort, 699
— — Temperature Carbonisation, Treatment of German Lignite, 744
— — Temperature Carbonisation, Pulverised Smokeless Fuel for Boiler Firing, 720*
— Mine. See *Colliery*
— Net and Gross Calorific Values, 678
— Production, Western Australia, 640
— Pulverised. See *Pulverised Coal*
— Pulverisers, Bettington and Holbeck (Fraser & Chalmers Engineering Works), 715*
— — Raymond, 381*
— — Kek Mill, 815*
— Spontaneous Combustion, Causes, 487, 679
— Store, Ferro-Concrete, Pitwines Gas Works, 781*
— See also PARAGRAPH INDEX
Coaling Transporter, 20-ton Electric, at Bowen, Queensland, 5*
Coalite. See *Coal, Low-Temperature Carbonisation*
Cobalt-Aluminium Alloys, Sand Cast, 103,
Cobb, Prof. J. W., on Thermal Expansion and Transformation of Silica, 386
Cobham, Sir A., Reception by Royal Aeronautical Society, 542
Cockle Separating Cylinders for Wheat, 26
Coefficient of Friction, Solid Surfaces, Effect of Gases, Vapours and Liquids, 619*, 654*
Coinage, Use of Nickel in, 345
Coke, for Blast Furnaces, Testing, 13
— Gasification with Steam, Effect of Added Constituents, 408
— Reactivity of, 409
Coker, Prof. E. G., on Photo-Elasticity, 605
Coking, Low-Temperature, of Coal. See *Coal*
— Stoker. See *Stoker*
Cold Storage. See *Refrigeration*
College. See *Education*
Collieries, Accidents due to Electrical Machinery, Report, 791
— Air Flow in, Calculation and Measurement, 58*, 122*
— Coal Dust and Firedamp Explosions, Research Work, 227, 611
— Electric Battery Locomotive for, Tests, 145
— Explosives in Mines Research Committee, Ignition of Firedamp by Explosives, 227
— Safety in, Research Board, Report on Flame-Proof Electrical Appliances, 166; Investigations of Detonation Velocities, 152*; Report on Research, 611
— Spontaneous Combustion of Coal, Causes, 487, 679
— Trapping Dust Produced by Rock Drills, 822
— United States, Stone Dusting in, 376
— Uses of Compressed Air, 549
Colliery Boiler Explosions, Reports, 245
— Dispute. See *Labour*
— Electrical Plant, Prevention of Flame Propagation by Perforated Plates, 166; Flame-Proof Vent for, 718; Accidents due to, 791
— Explosions, Ignition of Firedamp by Explosives, 227
— Explosives, Measurement of Velocity of Detonation, 152*; Ignition of Firedamp by, 227
— Haulage Gears, Compressed Air and Electric, 689*
— — Gears, Compressed Air Motor for, 689*
— Industry, Co-Partnership in, 289
— — Hours and Wages in, 190
— Lighting. See *Safety Lamps*
— Maurits, Ferro-Concrete Pit-Head Frame, 258*
— Shaft Sinking, Cementation Process, 719
— Trams, Griffiths' Door for, 693
— — Pressed Steel (Butterley Co., Ltd.), 692*
— — Runaway Catch for, 232
— Ventilating Fans, Operating Characteristics and Performance Curves, 121
— Winding. See *Winding*
— Working, Use of Power in (Review), 811
— See also *Mines* and *Coal*
Collisions of Alpha Particles with Light Atoms, 254. See *Erratum*, 304
— Electrons and Molecules, Energy Transference, 255
Collodion, Production of Thin Films, 676
Colloidal Fibres, Hygroscopic Properties, 256
Colonisation, Training for Overseas Life, 349
Colour Standardisation, Work of National Physical Laboratory, 114
Compagnie Parisienne de Distribution d'Electricité, Substation Plant, 569*
Companies. See PARAGRAPH INDEX
Combined Stress. See under *Stress* (*Materials*)
Combustion of Solid Carbon, Theory of, 730
— Spontaneous, of Coal, Causes, 487, 679
— Turbulent, of Pulverised Fuel, 267
— See also *Fuel; Gases;* and *Gaseous Explosions*
Commerce. See *Trade*. See also *Industries and Commerce* in PARAGRAPH INDEX
Commercial Aviation. See *Aeronautics*
— Gas Association, British, Conference, 575
— Motor Cars. See *Motor*
Commission, Royal. See *Royal Commission.*
Committee, Engineering Standards. See *Engineering* and *Standardisation*
— National Fuel and Power, Formation, 271
Commonwealth. See *Australia*
Compass, Gyroscopic, Development of, 792
Compound Locomotives. See *Locomotives*
— Stress. See *Tests* (*Materials*)
Compressed-Air Haulage Gear (Uskside Engineering Co., Ltd.), 689*
— — Motor, Colliery Haulage Gears, 689*
— — Production and Uses of, 549. See 531
— — Use for Oil Production, 550, 825
— — See also *Pneumatic*
— — Tools. See *Machine Tools*
— Gas Cylinders. See *Gas*
Compressor, Air. See *Air Compressor*
Compton Effect, Electron Tracks in, 255
Concentration Cells, Karpen, and Second Law of Thermodynamics, 141
Concert Halls, Acoustic Properties, of, 605*, 638*, 667*
Conciliation in Labour Disputes. See *Labour* and PARAGRAPH INDEX
Concrete Chimney, 400-ft., Tadanac, B.C., 35*
— Construction, O'Shaughnessy Dam, San Francisco Water Supply, 97*
— Houses, L.C.C. Housing Scheme, 140, 249
— Mixer, Motor-Driven (British Steel Piling Co., Ltd.), 718*
— Mixing and Distributing Plant, Foundation Work, Western Electric Co.'s Telephone Works, 253*. See 187*; Construction of Isle Maligne Power Station, 748*
— Panel Core Wall, Earth-Fill Dam, 410*
— Permeability of, Research, 617
— Placing at Low Temperatures, 749
— Reinforced. See *Ferro-Concrete*
— Roads, Construction and Maintenance, 360, 361
— Thrust Pier, Pipe Line, Bay Crossing, San Francisco Water Supply, 683*
Concrete Use of Celite in, 501. See *Erratum*, 538
— See also *Ferro-Concrete* and PARAGRAPH INDEX
Condensation Water Tunnel, Construction of, Western Electric Co.'s Works, 188*
Condensers, Air Ejector for (C.A. Parsons & Co., Ltd.), 717*
— Surface, Experiments on Properties of Steam, 712*
— Tubes, Scaling Tools for, 611*
— See also *Electric*
Condensing Plant, Film-Type Water-Cooling Towers, 719
Conditioning Machines, Artificial Silk, &c., 659*
— Plant for Wheat, 27*
Conduction, Electrolytic, Phenomena of, 207
Conductivity, Thermal and Electrical, Iron and Steel, 302, 306*
— — National Physical Laboratory Tests, 69*, 113
Conduit, Circulating Water, Construction, Western Electric Co.'s Works, 188*
— Flow of Water in, Use of Reynold's Number, 474*
— Oil Separator, 29*. See 7. See LETTERS, 133, 209
Conference, Imperial, and Co-Ordination of Research, 665
— World Power. See *World Power Conference*
Congress of Chemists, London, 80, 112, 129. See 144
— International Roads, Milan. See *Roads Congress*
— Public Safety, National Safety First Association, 574; Road Construction and Safety, by H. E. Aldington, 697
— Royal Sanitary Institute, 48, 80. See 79, 115
— Smoke Abatement, Birmingham, 331
Connecting-Rod Failure, Slow-Speed Engine, 203
Considère Constructions, Ltd., Ferro-Concrete Bunker, Beckton, 652*. See 589*
Consistency Tests, Cement, Report 821
Consolidated Mining and Smelting Company of Canada, Ltd., Concrete Chimney, 35*
Consulting Engineers and Ferro-Concrete Work, 12
Contactor Switches, Brookhirst Motor-Starting Panels, 180*
Continuous Girders, Bending Moments and Defections, Calculation, 63*
Controller, Arc Welding, 176*
— Electric Motor. See *Motors, Electric*
Converters, Rotary, 4,500-kw., Sydney Suburban Railway Electrification, 433*
Conveyors, Belt, Concrete Distribution, Foundation Work, Western Electric Co.'s Telephone Works, 254*. See 187*
— — Ball and Roller Bearing Rollers for, 651*, 717*. See *Erratum*, 724
— — Blake-Denison Automatic Weigher, 652*
— — Portable (Fraser & Chalmer's Engineering Works), 716*
— — with Travelling Feeders and Trippers, Coal-Handling, Beckton Gas Works, 650*. See 589*, 724
— Chain, Redler, for Flour Mills, 91*
— and Elevators, Brewers' Exhibition, 579
Cooling Towers, Film Type, 719
— Water Tunnel, Construction, Western Electric Co.'s Telephone Works, 188*
Co-Partnership. See *Labour*
Copper, Action of Hydrogen on, 320, 520*
— Alloys. See *Brass; Bronze; Gun-Metal;* and *Alloys* under *Metallurgy*
— Prices. See *Metal-Price Diagrams*
— Tubes, Arsenical, Season Cracking of, 320, 365*
— See also *Metallurgy*
Core Wall, Concrete-Panel, Earth-Fill Dam, 410*
Corn Grinding and Crushing Mill (Barford & Perkins, Ltd.), 86*
Corrosion, Aluminium, Prevention by Anodic Oxidation, 208, 274*
— Atmospheric, of Aluminium Alloys, 629
— Baskets of Centrifugal Machines, 113
— and Erosion of Refractory Materials, 823
— of Metals, Discussion at Congress of Chemists, 112. See 144
— of Oil Pipe Lines, and Protective Coverings, 120
— Resisting Materials, Chemical Plant, 112, 144
— Ship Plates and Rivets, 796*
— Steel Tubes, Effect of Segregation, 19
— Structural Steelwork, Steel-Framed Buildings, 631
Corrugated Pipes, Resistance to Water Flow, 115
Corsican Pines, Financial Return, 347
Cort, S. J., Comparisons of Open-Hearth Furnaces, 13
Costing, Dictionary of (Review), 270
Costs, Working, Heavy-Oil Engines, Report, 822
Cotton Dusting by Aeroplanes, 776
Coupler, Automatic, Majex M.C.B. Type, Transition Device, 631*
Couplings, Flexible, Winding Engines, 672
— See also *Clutch*
Coventry Victor Motor Co., Ltd., Motor Cycle Engine with Supercharger, 454
Cowan's Early Steam Carriage, Experience with, 543
Cox, G. V., the Late, 327
Cracking, Season, of Copper Tubes, 320, 365*
Cramp, Prof. W., on Electric Conduction, 207
Cramp, W., & Sons Ship and Engine Building Co., Larner-Johnson Valves, 96*
Crane Accidents, Prevention, Home Office Action, 360
— Electric Brakes for, 435*
— Electric Travelling, Shoosmith Type, Beckton Gas Works, 591*
— Floating, 200-ton Electric, Havre, 327
— — "London Mammoth," Launch, 677
— Portable, Salvage Work, Motor-Car Breakdowns, 832*
— Toplis Level-Luffing, Fulham Gas Works, 103*
Crankshafts, Weakening Effect of Oil Holes, 203

Craven, E. C., on Berginisation of Fish-Liver Oils, 764
Crawford, W. C., the Late, 677
Critical Points, Metals. See *Metallurgy*
— Temperature, Water, Determination, 649*
Crompton, Col. R. E. B., Presentation of Faraday Medal to, 19
Crops, Artificial Drying in Stacks, 591
— Dusting and Spraying by Aeroplane, 776
Crossley Brothers, Ltd., Exhibits at Reading Agricultural Show, 85; Horizontal Oil Engine, 733*
Crosthwaite Self-Cleaning Boiler Furnace, 690
Crude Oil Engines. See *Engines, Oil*
Cruisers. See *Warships*
Crushing Mill, Corn (Barford & Perkins, Ltd.), 86*
Crystal Analysis by Röntgen Rays, Quantitative Methods, 255
— Forces between Ions in, 256
— Models, Demonstration of, 256
— Single, of Aluminium, Behaviour under Reversed Torsional Stresses, 4, 320, 422. See 516
— Tungsten, Deformation of, 320
Crystalline Form and Chemical Composition (Review), 98
— Structure of Metals. See *Metallography; Micro-Photographs*
Culverts, Discharge from, University of Iowa Experiments, 653
Current, Electric. See *Electric*
Curtis Automobile Co., Ltd., Lancia-Lambda Motor Car, 535*
Cutter, Coal, Bar-Type, Compressed-Air, (British Flottmann Drill Co., Ltd.), 693
— — Chain Type, Compressed-Air or Electric (Mavor & Coulson, Ltd.), 693*
— — Compressed-Air and Electric (Anderson, Boyes & Co., Ltd.), 693
Cycle and Motor Cycle Show, Olympia, 453*
— Motor. See *Motor Cycle*
Cylinder Casting, Explosion, Steam Wagon, 617
— — Three-Cylinder Locomotive, Union Pacific Railroad, 413*
— Closed, Gaseous Explosions in, National Physical Laboratory Investigations, 5
— Gas. See *Gas*
— Rotating, Fluid Flow Round 34*
Cylindrical Grinding Machine. See *Grinding* under *Machine Tools*
Czecho-Slovakia, Water Power Development and Inland Navigation, 363

D.

DAIMLER Twelve-Cylinder Motor Car, 532*
Dam, Arch, Experimental, Stevenson Creek, California, Tests on, 562*
— Burrinjuck, Murrumbidgee River, Flood Conditions, 168
— Concrete Arch, Early Intake Diversion, with Automatic Sector Sluices, San Francisco Water Supply, 219*, 283*
— Dolgarrog, Failure of, Report, 484*. See 793
— Earth Fill, Priest Regulating Reservoir, San Francisco Water Supply, 410*
— Ferro-Concrete, Multiple-Arch, Lake Eleanor, California, 67*
— Gravity Arch, O'Shaughnessy, and Syphon Spillway, San Francisco Water Supply, 94*
— Inspection of. Proposed Legislation, 793
— and Spillways Isle Maligne Power Plant, Construction, 748*
— Tansa Lake, Bombay Water Supply, 314*
Danish. See *Denmark*
Danube, River, Water Power Development and Navigation, 362
Dashpot, Oil, for Motor Starting Switch, 179*
Davis & Lloyd, Ltd., Majex Coupler Transition Device, 631*
Davy Automatic Fire Escape, 693
De Havilland D.H. 66 Aeroplane, Air Route to Egypt and India, 820
Decarburisation, Surface, of Steel, 313, 462*
Deflections and Bending Moments, Continuous Girders, Calculation, 68*
— of Pipe Bends, Formula for, 821
Denison, S., & Son, Ltd., Automatic Weigher for Belt Conveyor, 652*
Denmark, Import of Electrical Energy, 377
Denny, W., & Brothers, Ltd., Clyde Passenger Steamer "King George V," 321*
Density Measurements, Photographic Negatives, Photo-Electric Photometer, 403*
Depth Indicator, Dial Gauge, for Brinell Tests, 784*
Derby Power Station Extensions, Pulverised-Fuel Installation, 545*
Desch, Prof. C. H., on the Sciences and Humanities, 348
Deschesne Process, Refinement of Cast Iron, 249*
Desert, Kalahari, Report on Irrigation, 269
Destructors for Town Refuse Disposal, 50, 79, 80. See 115
Detonation Velocity of Explosives, Measurement, 152*
Detroit, Airship Mooring Mast at, 807
Deutsche Werft A.G., Competition with British Shipbuilding, 360
Diagrams, Indicator. See *Indicator*
— Metal-Price. See *Metal-Price Diagrams*
Dial Gauge Depth Indicator, Brinell Tests, 784*
Diamond Saws, Maintenance of, 757
Dickie, H. A., on Cause of Temper Brittleness, 553*, 582*
Dictionary of Costing (Review), 270
Diehl, A. N., on Open-Hearth Steel Practice, 13; on Sulphur in Steel Manufacture, 629
Diesel Engine Users' Association, Report on Working Costs of Heavy Oil Engines, 822
— Engines. See *Engines, Oil, Diesel; Marine Propulsion*
Differential Gear. See *Gear; Motor-Car Details*
— Throttling Calorimeter, Determination of Specific Heat of Steam, 681*
Digging Machines, Potato, J. & F. Howard, Ltd., 85*; Boeke & Huidekoper, 86*; Hoover Power-Driven, 766*
Digging Machine. See also *Excavating Machine*
Directories. See LITERATURE INDEX
Disc, Rotating, Stresses in Rims, 12
— Separator for Wheat, Carter, 26
— Steam Turbine, Gyroscopic Vibration of, 581*
Disputes, Trade. See *Labour*
Dissman, R., the late, 642
Dissolved Gases in Metals, National Physical Laboratory Investigations, 68
— Oxygen in Feed Water, Recorder for, 610*
Distilling Plant, Use on Warships, 754
Distortion of Case-Hardened Rings, 470*
Diversion Dam, Hetch-Hetchy Water Supply, San Francisco, 219*, 283*
Diving, Use of Helium-Oxygen Mixtures, 678
Dixon, Engineer Vice-Admiral Sir R. B., on Marine Machinery, 736, 754
Dobson, Dr. G. M. B., Photo-Electric Photometer, 403*
Dock Construction Work, India, 566. See 573
— and Dock Extensions, Antwerp, 7, 24*, 51
— Dry, Esquimalt, Floating Caissons, 593*
— London, Street Traffic Congestion, 389
— Southampton, Extensions, 384*
Dockyard, Naval, Rosyth, Construction, 596
Dolgarrog Dam Disaster, Report, 484*. See 793
"Dolius," M.S., Performance, 185
Domestic Electric Supplies, Report, 511
— Heating, Gas and Electric, Comparisons, 196. See 206
"Dominia," Cable-Laying Steamer, Trials, 227
Door, Griffiths', for Pit Trams, 693
Dorchester Wireless Beam Transmitting Station, 515*. See 528*, 543, 587
Dorman, Long & Co., Ltd., Sydney Harbour Bridge Contract, Testing Machine for, 134*; Drilling Machines for, 164*
Dow Metal, Properties and Uses, 714
Dragline Excavator, Diesel-Engine Driven, 324*
Drainage Areas, Delimitation of, 49
— Fen, Burnt Fen District, Oil-Engine Driven Pumping Plant, 612*
— Tidal, British Guiana, Sluice Provision, 682*
Draper Hydraulic Separator for Coal, 719
Draught Tubes, Hydraulic Turbines, Design, 406*
Dredger "Carronwater," Launch, 357
— "Tolford," Launch, 364
— "Vizagapatam," Launch, 587
Dredging Work, River Fal, 702
Driers, Steam-Heated, Pulverised Fuel, Lopulco System, 381*
Drifter "Veracity," with Diesel Engine, 334
Drills and Drilling Machines. See *Machine Tools*
— Rock, Trapping of Dust Produced by, 822
Dry Dock. See *Dock*
Drying, Artificial, of Crops in Stacks, 591
— Machines, Turbiex and Turbo Simplex, 659*
— Refractory Materials, 385
Duddell Medal, Award to F. Twyman, 832
Dumbarton Straits Bridge. Pipe Line, San Francisco Water Supply, 685*
Dunkerley, H. M., on Refrigeration in Chemical Industry, 773
Dunstan, Dr. A. E., on Fluid Fuels, 423
Duralumin, Protection from Corrosion by Anodic Oxidation, 208, 274*
Dust, Coal, Explosibility of, 39, 121, 611
— — See also *Pulverised Coal*
— Particles, Laws of Air Elutriation, 773
— Produced by Rock Drills, Trapping of, 822
— Respirators, Investigations, 106
— Stone, Use in United States Collieries, 376
Dusting Cotton Plants, by Aeroplanes, 776
Dye, D. W., on Piezo-Electric Quartz Resonator, 13
Dynamic Braking, Electric Motors, 436*
Dynamometer, Torsion, Recording, Parker & Jackman's, 764*
— See also *Brake*
Dynamos. See *Generators, Electric; Turbo-Generators*

E.

EAGLE Engineering Co., Ltd., Motor Vehicle, for Street Watering, &c., 523*
Ear, Human, Acoustic Properties, 606
Earle's Shipbuilding and Engineering Co., Ltd., Trials of S.S. "Sheringham," 578
Early Intake Diversion Dam, Hetch-Hetchy Water Supply, San Francisco, 219*, 283*
Earth, Central Core, and Earthquake Waves, 257
— Fill Dam, Priest Regulating Reservoir San Francisco Water Supply, 410*
— Gravitational Field, Variation of, 256
— System, Rugby Wireless Station, 282*
— Temperatures, Measurements of, 795
Earthquakes, Effect on Ferro-Concrete Structures, 46
— Report of Investigation Committee, 256
— Santa Barbara and St. Lawrence, Effects on Buildings, 482
— Waves and the Earth's Central Core, 257
East African Trade, Report, 172
Ebonite Panels, Wireless Apparatus, Standard Specification, 807
Eccles, Dr. W. H., on the Electrical Industry, 541. See LETTER, 599
Echo Effect in Rooms, 639. See 667
— Sounding, Admiralty Method, 792
Eclipse Expedition, Sumatra, 1926, Work of, 257
— Solar, England, 1927, Features of, 257
Economics, Industrial. See *Labour*
— Railway. See *Railway*
Economisers, High-Speed, Design of, 592*. See LETTERS, 672, 701
Eddy-Current Brake, Brookhirst Motor-Starting Panels, 180*
Edge Hill, Explosion of Sulphuric-Acid Still, 456
— Moulding and Glue-Jointing Machine, 230*

Education:

Assaying, Chelsea Polytechnic Classes, 326
Automobile Engineers, Institution of, Training Scheme, 600
Bradford Technical College, Prospectus, 326

Education—*continued.*

Brighton Technical College, Prospectus, 326
Broadcasting, Use in Education, 349
Certificates, National, Mechanical Engineering, Progress of Scheme, 759. See 792, 825
— — in Naval Architecture, 106, 694
Chelsea Polytechnic, Classes in Metallurgy and Assaying, 326
China, Boxer Indemnity, Use for Education, 209
City and Guilds Engineering College, Goldsmiths' Company Extension, 543
— — of London Institute, Prospectus, 326
Educational Training for Overseas Life, 349
Engineering, Mechanical, National Certificates, Progress of Scheme, 759. See 792, 825
— Scholarships, University College, London, 137
Engineers, Education of, Works and College Training, 575
Examinations, Science and Whitworth Scholarships, 641
Gas Industry, Education Scheme, 392
Gas Light and Coke Co., Training Centre for Apprentices, 724
Imperial College of Science, Royal Scholarships and Studentships, 106; Department of Aeronautics, Prospectus, 478; Goldsmiths' Company Extension, 543
Kinematograph Films, Educational Possibilities, 349
King's College, London, Prospectus, 508
Lloyd's Register Scholarships, 694
Manchester College of Technology, Chair of Mechanical Engineering, 167; Prospectus, 448; Journal, 494
Marine Engineering Studentships, Lloyd's Register, 694
Mechanical Engineering, National Certificates, Progress of Scheme, 759. See 792, 825
Metallurgy, Chelsea Polytechnic Classes, 326
National Certificates, Mechanical Engineering, Progress of Scheme, 759. See 792, 825
— — in Naval Architecture, 106, 694
Naval Architecture, National Certificates in, 106, 694
— — Scholarships, Institution of Naval Architects, 694
Royal Air Force Cadetships, 357
— Scholarships and Studentships, Imperial College of Science, 106
— Technical College, Glasgow, Calendar, 296
Scholarships, Colliery and Mining Engineering, 264
— Engineering, London University College, 137
— Lloyd's Register, 694
— Naval Architecture, Institution of Naval Architects, 387, 694
— and Studentships, Royal, Imperial College of Science, 106
— Whitworth, 106, 264, 641, 709. See 778
Science, History of, Link between Science and Humanities, 348
— Museum, South Kensington, Engineering Lectures, 731
— Scholarship Examinations, 641
Sheffield University, New Research Laboratories, 50
South Wales and Monmouthshire School of Mines, Calendar, 264
Supervising Electricians, National Association of, Economic Premiums, 508
Transport, Institute of, Graduateship Examination, 448
University of Bristol, Prospectus, 177
— College, London, Engineering Scholarships, 137; Prospectus, 448, 508; Centenary Appeal Fund, 730
— — Swansea, Prospectus, 418
— of Sheffield, Research Laboratories, 50
Westminster Technical Institute, Prospectus, 418
Whitworth Book (Review), 778
— Scholarships, 106, 264, 641, 709
Wireless Telephony, Use in Education, 349
See also PARAGRAPH INDEX
Edwards, D., on House-Refuse Disposal, 80. See 79, 115
Edwards & Co., Ltd., Ferryboat with Gill Hydraulic Propeller, 167*
Efficiency of Boiler Plants. See *Boiler Plants*
— of Engines. See *Engines; Trials*
— of Hydraulic Turbines, Methods of Determining, 334
— Limiting, of Reaction Steam Turbine, 1
— Tests, Hydraulic Turbines, Definition of Net Head, 441
— — Marine Oil Engines, 761*, 767*, 781, 799
Egypt, Air Service to, 820
— British Trade with, Decline in, 300
— Economic and Financial Situation, 699
Elgiau Dam, North Wales, Failure of, 484*. See 793
Ejector, Air, for Condensers (C. A. Parsons & Co., Ltd.), 717*
"El Amir Farouq," S.S., Trials, 312
Elastic Deformation of Pipe Bends, 821
Eleanor Lake Dam, San Francisco Water Supply, 67*

Electric:

Accelerating Relay, Field Regulation, Brookhirst Motor Starter, 181*
Accumulator Locomotives for Mines, Tests, 145
— for Miners' Safety Lamps, 688
Agriculture, Use of Electricity in, 206, 211*, 423, 447
Alternating Currents, Variable-Frequency, Production and Use, 31*, 99*, 159*
— — Theory and Practice (Review), 426
Alternator. See *Generator* and *Turbo*

Electric—*continued.*

Apparatus, Electric, Treatise on (Review), 439
Arc Furnace. See *Furnace, Electric*
— Welding. See *Welding*
Atmospheric Electricity, Fundamental Problems, 764
Battery. See *Accumulator* (above)
Brakes, Electric, Types and Characteristics, 435*
British Electrical and Allied Industries Research Association, Properties of Steam at High Pressures, 640*, 681*, 712*
— — and Allied Manufacturers' Association, Annual Dinner, 667; Trade Survey, 702
Buildings, Electrical Equipment, Regulations, 516
Cables, Paper Insulation for, Tests at National Physical Laboratory, 126
— Power Distribution, Voltage Control, 54
— Soldering Sockets, Standard Specifications, 383
Cartridge Fuses, Aeroflex, 693*
Cells, Concentration, Karpen, and Second Law of Thermodynamics, 141
— Selenium, Prof. Thirring's, 628
Central Station. See *Power Stations*
Concentration Cells, Karpen, and Second, Law of Thermodynamics, 141
Condensers, Power Factor Correction by, Effect of Harmonics, 216*, 223
— Type Microphone, Wente, 606*
Conduction, Electrolytic, Phenomena, 207
Conductivity, Iron and Steel, Investigations, 302, 306*
Contactor Switches, Brookhirst Motor-Starting Panels, 180*
Controller, Arc-Welding, 176*
Converters, Rotary, 4,500-kw., Sydney Suburban Railway Electrification, 433*
Cranes. See *Cranes*
Domestic Electric Supplies, Report, 511
Dynamo. See *Generator; Turbo-Generator*
Earth System, Rugby Wireless Station, 282*
Eddy-Current Brake, Brookhirst Motor-Starting Panels, 180*
Electric Circuits and Installation Diagrams (Review), 143
Electrical Department, National Physical Laboratory, Work of, 114, 126
— Engineering Terms, Standard Glossary, Criticism of, 223, 245. See LETTER, 395
— Equipment of Motor Cars (Review), 778
— Industry, British, Position of, 541. See LETTER, 599
— Machinery in Collieries. See *Collieries*
— — Import and Export Trade, 607*
Electricity Bill and the Electricity Commissioners, 789
— — and the Gas Industry, 392
— — Provisions of, 636
— Commissioners, Annual Report, 789
— — and the Electricity Bill, 789
— — Statistics of Undertakings, 604
Electrochemical Potentials, Carbon and Chromium Steels, 430*
Electro-Endosmosis and Electrolytic Water Transport, 576
Electrolytic Conduction, Phenomena, 207
Electro-Magnetic Alternating Stress Testing Machine, 722*
Electrostatic Machines, Current-Voltage Characteristics, 14
Furnaces. See *Furnaces*
Fuses, Cartridge, Aeroflex, 693*
Generating Stations, See *Power Stations*
Generator. See *Generator* and *Turbo*
German Electrical Industry, Position, 204,
Harmonics, Voltage, Effect in Power Factor Correction by Condensers, 216*, 223
Hydro-Electric Power Plants. See *Power Plants*
Ignition for Internal-Combustion Engines. See *Ignition; Magneto*
Impedances, Input, Thermionic Valves, 756
Inductance Coils, High Power, Rugby Wireless Station, 184*
Induction Coil, Current and Potential Curves with X-Ray Tube, 114*
— Furnace. See *Furnace, Electric*
— Motors. See *Motors, Electric*
Installation Diagrams and Electric Circuits (Review), 143
Insulation, Paper, for Cables, Tests at National Physical Laboratory, 126
Insulators, Fused Quartz, Prevention of Deterioration, 115
— Aerial, Rugby Wireless Station, 281*
Lamps, Electric, Tests of Enamelled Steel Reflectors, 775*
Locomotives. See *Locomotives, Electric*
Machines. See *Generators; Motors; Turbo*
Magnetos. See *Magnetos; Ignition*
Mains. See *Cables* (above)
Meters, Electricity, Tests at National Physical Laboratory, 115
Motor Cars, Electrical Equipment (Review), 778
— See *Motors, Electric*
Oil Switch. See *Switchgear*
Piezo-Electric Quartz Resonator, Equivalent Circuit, 13
Plugs and Sockets, Electric, Nulla Adjustable, 516
Potentials, Electrochemical, Carbon and Chromium Steels, 430*
Power Factor Correction by Condensers, Effect of Harmonics, 216*, 223
— Stations. See *Power Stations*
— See *Power*
Pyrometer. See *Pyrometer*
Quartz Resonator, Piezo-Electric, Equivalent Circuit, 13
Railways. See *Railways*
Refining Metals Electrically (Review), 700
Relay, Accelerating, Brookhirst Motor Starter, 181*

Electric—*continued.*

Resistance, Standard, National Physical Laboratory Measurements, 114. See 126
— Welding. See *Welding*
Resonator, Quartz, Piezo-Electric, Equivalent Circuit, 13
Röntgen Rays. See *Röntgen*
Rotary Converters, 4,500-kw., Sydney Suburban Railway Electrification, 433*
Rules, Electrical Equipment of Buildings, 516
Screen, Vibrating, Electro-Magnetic, for Coal Grading, 690*
Selenium Cells, Prof. Thirring's, 628
Ship Propulsion. See *Marine Propulsion*
Soldering Iron, Seva Electric, 418
Solenoid Brakes, Types and Characteristics, 435*
Standard Electrical Units, Work of National Physical Laboratory, 114. See 126
Starters, Motor. See *Motor, Electric*
Steel Manufacture. See *Metallurgy* and *Furnace, Electric*
Storage Battery. See *Accumulator* (above)
Street Railways. See *Tramways*
Substation. See *Substation*
Switches, Contactor, Brookhirst Motor-Starting Panels, 180*
Switchgear. See *Switchgear; Motors, Electric*
Telegraphy. See *Telegraphy*
Telephony. See *Telephony*
Thermometer. See *Thermometer*
Traction. See *Locomotives, Electric; Railless; Railways; Tramways*
Tramways. See *Tramways*
Transformers. See *Transformers*
Turbo-Generators. See *Turbo-Generators*
Units, Standard Electrical, Work of National Physical Laboratory, 114. See 126
Variable-Frequency Currents, Production and Use, 31*, 99*, 159*
Voltage Control on Loaded Distributors, 54
— Harmonics, Effect in Power-Factor Correction by Condensers, 216*, 223
Wattmeters, Tests at National Physical Laboratory, 115
Waves, Electromagnetic. See *Telegraphy, Wireless; Telephony, Wireless*
Welding. See *Welding*
Winding Gear. See *Winding*
Wireless Telegraphy. See *Telegraphy*
— Telephony. See *Telephony*
Wiring of Buildings, Regulations, 516
X-Rays. See *Röntgen Rays*
See also PARAGRAPH INDEX
Electric Construction Co., Ltd., Exhibits at Cardiff Engineering Exhibition, 718
Electrical Engineering Terms, Standard Glossary, Criticism of, 223, 245. See LETTER 395

Electrical Engineers, Institution of:

History of the Telephone, by Sir O. Lodge, 19. See LETTER, 54
Presentation of Faraday Medal to Col. R. E. B. Crompton, 19
Jubilee of the Telephone Celebrations, 19. See LETTER, 54
Exemption from Examination for Associate Membership, 106
Award of Students' Premiums, 177
Regulations for the Electrical Equipment of Buildings, 516
Presidential Address by Dr. W. H. Eccles, on the Position of the Electrical Industry, 541. See LETTER, 599
Wireless Section:
Rugby Radio Station of the British Post Office, by E. H Shaughnessy, 147*, 181*, 279*
Electrical Equipment of Motor-Cars (Review), 778
— Industry, British, Position of, 541, 702. See LETTER, 599
— — German, Position of, 204
— Machinery in Mines. See *Collieries*
Electricians, Supervising, National Association of. See *Supervising*
Electricity Bill. See under *Electric*
— Commissioners. See under *Electric*
Electrochemical Potentials, Carbon and Chromium Steels, 430*
Electro-Endosmosis and Electrolytic Water Transport, 576
Electrolux Absorption-Type Refrigerator, 75*
Electrolytic Conduction, Phenomena of, 207
— Corrosion. See *Corrosion*
— Process, Preparation of Beryllium, 68, 673*. See *Errata*, 725
— — Protection of Aluminium from Corrosion, 208, 274*
— Water Transport and Electro-Endosmosis, 576
Electro-Magnetic Alternating-Stress Testing Machine, 722*
Electron Collisions, Mechanics of, 225
— — with Molecules, Energy Transference, 255
— Gyro-Magnetic, Atomic Structure and Radiation, 225
— Tracks in Photo-Electric and Compton Effects, 255
Electrostatic Machines, Current-Voltage Characteristics, 14
Elektron, Magnesium Alloy, Properties of, 714
Elements, Transmutation by Low-Voltage Currents, 255
Elevating Plant, Grain, Pneumatic, 26
Elevators and Conveyors, Brewers' Exhibition, 579
Ellerman Liner "City of Bath," Trials, 8
Elliott, T. G., on Chemically-Resistant Steels, 113
Ellis, H., the Late, 816
Ellis, Prof. D., on Sulphur Bacteria, 231*. See 223
Elson, G., on Remodelling Charing Cross and Cannon Street Stations, 721
Elsinore Shipbuilding and Engineering Co., Ltd., M.S. "Jylland," 693
Elutriation, Air, Laws of, 773
Elutriation Kinetic, Demonstration at British Association Meeting, 224
Embankments, Inspection of, Proposed Legislation, 793
Emery Wheels. See *Grinding* under *Machine Tools*
Emigration, Educational Training for Overseas Life, 349
Emperger, Dr. F., Cast-Iron Reinforcement for Concrete, 622*
Empire, British, Co-Ordination of Research Work, 665
— Development, Work of Engineers, 329
Employment. See *Labour*
Emulsifying Plant, Chemical Plant Exhibition, 145
Enamelled-Steel Reflectors, Electric Lamps, Tests of, 775*
Endomosis, Electro, and Electrolytic Water Transport, 576
Endurance Tests. See *Alternating Stress* under *Tests (Materials)*
Engines, Aero. See *Aeronautics.*
— Diesel. See *Engines, Oil, Diesel; Marine Propulsion; Motor Ships*
— Fire. See *Fire Engines*
— Indicators. See *Indicators*
— Internal-Combustion, Chorlton Governors for, 87*
— — Combustion, Design of Pistons for, 142*
— — Combustion, High Output (Review), 438
— — Combustion, Ignition Point of Gases, 12
— — Combustion, Optical Indicators for, 727
— — Combustion. See also *Turbines, Internal Combustion*
— Locomotive. See *Locomotive*
— Motor Car. See *Engines, Petrol*
— Oil, at Agricultural Show, Reading, 52*, 83*
— — Baffle Piston for, 304*
— — Compression-Ignition Type, Investigations of Fuel Injection, 277*. See 207
— — Diesel, Bâle Exhibition, 174
— — Diesel, for Dragline Excavator (Northwest Engineering Co.), 324*
— — Diesel, 1,000-h.p., and Electric Generator, Diesel-Electric Locomotive, 150*
— — Diesel, Electric Power Production, Comparisons with Water Power, 379
— — Diesel, Experiments on Fuel Ignition, 364
— — Diesel, 600-h.p., Four-Stroke (Bellis & Morcom, Ltd.), 626*
— — Diesel, 15,000 h.p., M.A.N. Type, and Electric Generator, Hamburg Power Station, 117*; Trials, 555*
— — Diesel, Marine, Comparisons with Steam Turbines, 17. See *Erratum*, 37.
— — Diesel, Marine, 2,900-h.p., Double-Acting Two-Stroke, (Worthington Pump and Machinery Corporation), 349*
— — Diesel, Marine, M.S. "Carnarvon Castle," 21*
— — Diesel, Marine, Exhaust-Heated Boiler for, 761*
— — Diesel, Marine, Mixture Strength and Performance, 762*
— — Diesel, Marine, Propulsive Efficiency in Motor Ships, 763
— — Diesl, Marine, Richards-Deutz, for Herring Drifter "Veracity," 334
— — Diesl, Marine, Werkspoor Type, M.S. "Cape York," Report on Trials, 761*, 767* 781, 799
— — Diesel, Naval Uses, 754
— — Diesel, Report on Working Costs, 822
— — Diesel, Uses of Compressed Air, 550
— — Diesel. See also *Motor Ships; Marine Propulsion; Diesel Engine Users' Association*
— — Effect of Reduced Air-Intake Pressure, 686
— — High-Duty Compression-Ignition Type, '07, 277*
— — 10-h.p. Horizontal (Bamfords, Ltd.), 83*
— — 5-h.p. Horizontal (Ruston & Hornsby, Ltd.), 52*
— — Horizontal Enclosed Type (Crossley Brothers, Ltd.), 733*
— — 14-h.p. Horizontal, Fiat, 489*
— — 16-h.p., Horizontal Portable (Marshall, Sons & Co., Ltd.), 52*
— — 132-h.p. Horizontal Twin-Cylinder (National Gas Engine Co., Ltd.), 53*
— — Hydrogen and Coal Gas as Auxiliary Fuels, 685
— — for Inland-Navigation Craft, 363
— — Marine, Trials, Report of Committee, 761*, 767*, 781, 799
— — Marine, 600-h.p., Six-Cylinder Direct-Reversing, for Motor Tug (Vickers-Petters, Ltd.), 475*
— — 510-550 h.p. Six-Cylinder, Worksop Power Station (Petters (Ipswich), Ltd.), 811
— — and Steam Combined, Plenty-Still, for Trawlers, 537*, 585*
— — 350-h.p. Three-Cylinder Horizontal, and Centrifugal Pump, for Fen Drainage (Blackstone & Co., Ltd.), 613*
— — 16-18 h.p. Two-Cylinder Vertical (R. A. Lister & Co., Ltd.), 85*
— — 50-h.p., Vertical Two-Stroke (Marshall, Sons & Co., Ltd.), 52*
— — Vertical, Two-Stroke Hot-Bulb Type (Marshall, Sons & Co., Ltd.), 733*
— — See also *Tractors* and PARAGRAPH INDEX
— Petrol, Aeroplane. See *Aeronautics*
— — at Royal Agricultural Show, Reading, 52*, 83*
— — Automatic Starting, Lister-Bruston System, 455*
— — Baffle Piston for, 304*
— — and Centrifugal Pump, Portable (J. W. Brooke & Co., Ltd.), 427
— — Motor Car, 50-150 h.p., Twelve-Cylinder, Sleeve-Valve, Daimler, 532*
— — Motor Car, 16-h.p. Four-Cylinder, Lancia-Lambda, 536
— — Motor Car, 15-9-h.p. Four-Cylinder, Morris Colonial Model, 565*
— — Motor Car, 12-h.p. Four-Cylinder, Two-Stroke, Trojan Car, 504*
— — Motor Car, Lanchester Vibration Damper 532*
Engines, Petrol, Motor Car, 11-65 h.p. Riley, with Supercharger, 534*
— — Motor Car, 18-50 h.p., Six-Cylinder (Bean Cars, Ltd.), 503*
— — Motor Car, 14-45 h.p. Six-Cylinder, Talbot, 535
— — Motor Car, Trend of Design, 453, 502
— — Motor Cycle, Silencing of, 453
— — Motor Cycle, with Supercharger (Coventry Victor Motor Co., Ltd.), 454
— — Motor Cycle, Two-Cylinder Two-Stroke Type (Francis & Barnett, Ltd.), 454*
— — Motor Cycle, Two Cylinder Vee Type (Phelon and Moore, Ltd.), 453*
— — Optical Indicators for, 727
— — with Reciprocating-Armature Magneto (British Steel Piling Co., Ltd.), 718*
— — See also *Aeronautics; Carburettors; Motor Cars*
— Steam, Compound (Yorkshire Steam Wagon Co.), 81*
— — and Oil Combined, Plenty-Still, for Trawlers, 537*, 585*
— — Tandem Compound, and Ventilating Fan, Modderfontein (Walker Bros. (Wigan) Ltd.), 226*
— — Traction, Boiler Explosion, 802
— — Traction. See also *Tractors*
— — Triple-Expansion, Pumping, Walton, Pumping Station, 41*
— Winding. See *Winding*
— See also PARAGRAPH INDEX
Engineering, Agricultural, Institute of. See *Agricultural*
— Applications to Agriculture, 12
— Appointments and Membership of Institution of Civil Engineers, 545, 579
— Apprentices. See *Apprentices*
— Education. See *Education; Apprentices*
— Firms, Financial Data, 608
— Index, American Society of Mechanical Engineers, 175
— Industry, British, Economic Position, 607*
— — Effect of Coal Dispute, 391
— Laboratories. See *Laboratories; National Physical*
— Lectures, South Kensington Museum, 731
— Marine, Naval Practice, Recent Progress, 736, 754
— Mechanical, National Certificates, Progress of Scheme, 759. See 792, 825
— — Progress of, 759. See LETTER 825
— Research Board, Fatigue Tests, Steel, in Chemical Solutions, 807*
— Societies. See *Institutions*
— Standards Association, Work of, 632; Standard Specifications, Paint Materials, 45, 214, 579; Standard Specifications, Brass Bars and Sections, 97; Standard Glossary of Electrical Engineering Terms, Criticism of, 223, 245. See LETTER 395; Standard Specification for Brazing Solder, 357; Standard Specification for Small Motors, 357; Standard Specification, Electric Cable Soldering Sockets, 383; Standard Specifications, Portland Blast-Furnace Cement, 383; Standard Table, Cast Iron Flanges for Gas Pipes, Etc., 667; Standard Specifications, Direct-Current Switchgear, 694; Standard Specifications, Pipe Flanges for Land Use, 741; Standard Specifications, Radio Ebonite Panels, 807
— Work in India, 566, 573, 613. See *Erratum*, 600
— — See *Works*
Engineers in Birthday Honours List, 50
— Chemical, Institution of. See *Chemical Engineers*
— Consulting, and Ferro-Concrete Work, 14
— Education. See *Education; Apprentices*
— Institution of Australia, Presidential Address by G. A. Julius, on Australian Manufacturing Policy, 160*
— — See *Institutions*
— Naval, Status, of, 18, 132
— and the Prevention of Malaria (Review), 239
— Production, Institution of. See *Production*
— and Public Health, 48
— Service to Mankind, 329
— and Shipbuilders in Scotland, Institution of, Wire for Steel Ropes, by Dr. E. M. Horsburgh, 542; Report of Council, 807
— Society of Western Pennsylvania, Turbulent Combustion of Pulverised Fuel, by H. W. Brooks, 267
— Work and Human Progress, 235
English Electric Co., Ltd., 20,000-kw. Turbo-Generator for Bradford, 465*
"Ennale," Steam Trawler, Boiler Explosion, 372
Ensor, H. T., the Late, 296, 324
Eötvös Torsion Balance, 101*
Epstein, S., on Phosphorus in Wrought Iron, 13
Equilibrium Diagrams, Alloys. See *Metallurgy*
"Eres," M.Y., Trials, 175
Erosion of Refractory Materials, 823
Esquimalt Dry Dock, Floating Caissons, 593*
Estate Saw Mills, 348
Estuaries, River, Sites for Tidal Power Schemes, 579, 599, 641, 672
Etching Reagents, Alloy Steels, 140
Eternit Water Pipes, Tests of, Italian State Railways, 702. See 270
Ether-Drift Experiments at Mount Wilson, 67, 257
Eutectic Alloys. See *Alloys* under *Metallurgy*
Evans Collection, Ancient Scientific Instruments, 223
Evans, E. J., on Electrostatic Machines, 14
Evaporation Losses, Storage and Transport of Petrol, 5, 120
Evaporators, Kestner, Chemical Plant Exhibition, 144
Evershed & Vignolles, Ltd., Switch Operation Recorder, 718*
Excavator, Bucket, Sauerman Cable-Suspension System, 717*
— Dragline, Diesel-Engine Driven, 324*
— Motor-Driven, on Caterpillar Track (Ruston & Hornsby, Ltd.), 568*. See *Erratum*, 816
Exeter Tools and Machinery, Ltd., Small Sensitive Drill, 390
Exhaust-Heated Boiler, Marine Oil Engine, 761*
— Steam Turbine. See *Turbine, Steam*
— — Utilisation for Heating, 603
— Valves. See *Valves*
Exhibition, Agricultural Show, Reading, 52*, 81*
— Brewers', Royal Agricultural Hall, 579
— British Chemical Plant, 144. See 80, 112, 129
— Cycle and Motor Cycle, Olympia, 453*
— Engineering, Cardiff, 688*, 715*
— Inland Navigation and Water Power, Bâle, 173
— of Inventions, 516
— Model Engineer, 390
— Motor-Car, Cairo, 300
— Motor-Car, Olympia, 502*, 532*, 564*
— National Radio, Olympia, 330
— Road-Construction Plant, International Roads Congress, Milan, 413
— Smithfield Agricultural Show, 732*
— Smoke Abatement, Birmingham, 331
— Water Power and Inland Navigation, Bâle, 173
— See also PARAGRAPH INDEX
Experimental Engine. See *Engine*
— Tank. See *Tank; Ship Resistance*
Explosibility of Coal Dust, 39, 121, 611
Explosion, Boiler Blow-Down Tank, 103
— — See *Boiler Explosions*
— Bone Drying and Degreasing Machine, 702
— Calender at Willesden Laundry, 414
— Colliery. See *Colliery Explosions*
— Cylinder Casting, Steam Wagon, 617
— Feed-Water Pipe, Audenshaw, 456
— Gaseous. See *Gaseous Explosions*
— Pulverised Coal-Plants, Report, 237
— Steam Jacketed Pans, 456, 617
— — Pipe, S.S. "Lynntown," 617
— Stop-Valve Chest, S.S. "Tuscanstar," 802
— Sulphuric-Acid Still, Edge Hill, 456
— Valve Chest of Turbo-Generator, Barking Power Station, 617
— Wax-Melting Pan, 414
Explosives, Colliery, Measurement of Velocity of Detonation, 152*
— in Mines Research Committee, Ignition of Firedamp by Explosives, 227
— Rock Blasting, Construction of Isle Maligne Power Station, 750
— See also *Guns and Explosives* in PARAGRAPH INDEX
Export of Electric Energy, 377
— Trade. See *Trade*; and *Industries* in PARAGRAPH INDEX
Extensometer, Autographic, Mechanical, Sheffield University, 525*. See LETTER, 599

F.

FABROLITE Moulding, British Thomson-Houston Company's Works, 447*
Factories, Atmospheric Conditions and Index of Comfort in, 290
— Heating and Ventilating of, Reports, 102
— Safety Regulations in, Report, 359. See 433
Factory Accidents. See *Accidents*
— Management. See *Works Management*
— and Workshop Act, Building Regulations, 121
Fagan, J. W., on Drying and Burning Refractory Materials, 385
Fal River, Dredging, 702
Fans, Mine-Ventilating, Operating Characteristics and Performance Curves, 121
— Mine-Ventilating, Steam-Driven, Modderfontein, 226*
Faraday Medal, Presentation to Col. R. E. B. Crompton, 19
— Society, Anodic Behaviour of Ferro-Manganese, by Dr. A. N. Campbell, 611: Beryllium, by A. C. Vivian, 673*. See *Errata*, 725; Gas Absorption in Steel, by T. C. Sutton and R. H. Ambler, 678
Farman Motor-Car Steering Gear, 565
Farming. See *Agriculture; Tractors*
Fatigue, Industrial. See under *Labour*
— Tests of Metals. See *Alternating Stress* under *Tests (Materials)*
Fay & Egan Co., Woodworking Machines, 230*
F. E. W. Patents Ltd., Paramount Motor Cycles, 454*
Feed Heating, Multi-Stage Bleeding for, 61
— Pumps. See *Pumps*
— Roller, Bevel, for Band Saw, 640*
— Water Heating, Design of High-Speed Economisers, 592*. See LETTERS 672, 701
— — Pipe, Explosion, Audenshaw, 456
— — Recorder for Dissolved Oxygen in, 610*
— — Softener. See *Water Softener*
Feeder, Travelling Hopper, for Belt Conveyors, Beckton Gas Works, 650*. See 589*
Fen Drainage, Oil-Engine Driven Pumping Plant, Burnt Fen District, 612*
Fencing of Shafting and Pulleys, 359
Ferguson Brothers (Port Glasgow), Ltd., Launch of Dredger "Carronwater," 357
Ferro-Concrete Arch Bridge, with Cast-Iron Reinforcement, Gmüden, Austria, 622*
— — Arch Retaining Wall, Ahmedabad, 464*
— — Arch Road Bridge, Caversham, 343*
— — Bridges, Italian (Review), 438
— — Bridge Piers, Pipe Line, Bay Crossing, San Francisco Water Supply, 685*
— — Chimney, 400-ft., at Tadanac, B.C., 35*
— — Coal Bunker, Beckton Gas Works, 652*. See 589*
— — Coal Store, Pitwines Gas Works, 781*
— — Construction Regulations, London, 752
— — Multiple Arch Dam, Lake Eleanor, California, 67*
— — Pit-Head Frame, Maurits Colliery, Holland, 258*
— — Poles, Stobie System, 416*
— — Screen Rack Towers, O'Shaughnessy Dam, San Francisco Water Supply, 95*
— — Structures, Effect of Earthquakes and Weather, 46, 492

Ferro-Concrete Surge Shaft, Moccasin Power Station, California, 497*
— — Work and Consulting Engineers, 14
— — See also PARAGRAPH INDEX
— Manganese, Anodic Behaviour of, 611
Ferry-Boat with Gill Hydraulic Propeller, 167*
— Seacombe, Floating Landing Stage and Roadway, 557*
Fiat Horizontal Oil Engine, 489*
Fibres, Wool, Hygroscopic Properties of, 256
Fieldner, A. C., on Ash Composition and Uses of Coal, 120
Fillets and Holes, Stress Concentration Produced by, 222
Films, Thin, of Collodion, Production of, 676
— Type Cooling Tower, Circulating Water, 719
Filter Beds, Oswestry, Liverpool Water Supply, 123*
— — Resistance of, Recording Venturi Meters for, 123*
Filtration Plant, Rapid and Slow Sand, Metropolitan Water Board, Walton, 9*. See 40*, 111
Filtrators, Ltd., Boiler-Scale Prevention, 415*
Financial Aspects of Forestry, 290, 347, 348
— Data, Engineering Firms, 608
Fine Grinding, Chemistry of, 280
— Wires, Measurement of Diameters, 127*
— — Torsion Testing Machine for, 679*
Finlayson, T. C., on Statistical Methods and Industrial Efficiency, 765
" Firby," S.S., Trials, 15
Fire Escape, Davy Automatic, 693
— Extinguisher, Fire-Snow, Tests, 616
— Extinguishing, Motor Vehicle for, 523*.
— Forest, Use of Aircraft in, 777
Fire-Snow Fire Extinguisher, Tests, 616
Fireboxes, Locomotive, Gaines Arch for, 519*
Firebricks. See *Refractory Materials*
Firedamp Explosions, See *Colliery Explosions*
Firth of Forth, Construction of Rosyth Dockyard, 596
Fish Life and River Pollution, 333
— Liver Oils, Berginisation of, 764
Fishing Boat " Veracity," with Diesel Engine, 334
— Vessels, Plenty-Still Engine for, 537*, 585*
Fitzgerald, G., on Transport of Petroleum, 120
Flanges, Cast-Iron, for Gas Pipes, Standard Table, 667
— Pipe Land Use, Standard Specification, 741
Flax Scutching Machine, (Marshall, Sons & Co., Ltd.), 86*
Fleming, R., on Recent Earthquakes, 482 ; on the Florida Hurricane, 711
Flettner Rotor Ship " Barbara," Trials, 427
Flexible Couplings for Winding Engines, 672
— Pipe Joint (Carlton Pipe Joint Co., Ltd.), 602*
Flight. See *Aeronautics*
Floating Caissons, Esquimalt Dry Dock, 593*
— Crane. See *Crane*
— Landing Stage and Roadway, Seacombe Ferry, 557*
Floats, Seaplane, Development in United States Navy, 705*
Flooring, Steel Mesh, Brewers' Exhibition, 579
Floors and Ceilings, Sound-Proof, 668*
Florida Hurricane, Effect on Buildings, 711
Flotation, Limestone from Siliceous Gangue, 45
— Process, Ore Concentration, United States, 741
Flour Milling Machinery, Modern, 26*, 55*, 91*.
Fluid Flow round Rotating Cylinder, 34*
Flying Boats. See *Seaplanes* under *Aeronautics*
Focal Point, Optical Systems, Method of Determining, 662
Forbes, A. C., on Financial Aspects of Forestry, 290
Ford, Miss G. W., on Properties of Spring Steel, 313
Foremen, Planning Department in Relation to, 471
Forest Destruction in Tropical Countries, Dangers of, 290
— Fires, Use of Aircraft in, 777
— Plantations, Irrigated, Punjab, 348
Forestry, Financial Aspects, 290, 247, 348
— Underwood and Its Uses, 348
Forging Press. See *Press* under *Machine Tools*
Forplex Pulveriser for Pulverised Fuel, 295*
Forrest Lecture, by Senatore G. Marconi, on Radio Communications, 543, 587
Forth, Firth of, Construction of Rosyth Dockyard, 596
Foundation Work, Western Electric Co.'s Telephone Works, 187*, 253*
— Bearing Power of Piles, 189
Foundry Work, Centrifugal Casting Process, Production of Bronze Worm-Gear Blanks, 320, 338*. See LETTERS, 395, 443
— — Macrostructure of Cast Metals, Interpretation, 88*
— — Refinement of Cast Iron by Shaking, 249*
— See also *Castings ; Moulding*
Fowler, J. & Co., (Leeds), Ltd., Exhibits at Reading Agricultural Show, 84
Fowler, Prof. A., on the Analysis of Line Spectra, 225
France, Railway Electrification in, 424
— See also *French*
Francis & Barnett, Ltd., Motor Cycle, 454*
— Turbines. See *Turbines, Hydraulic*
Francois Cementation Co., Ltd., Colliery Shaft Sinking Process, 719
Fraser & Chalmers Engineering Works, Coal-Handling Plant, Beckton Gas Works, 589*, 650*. See *Erratum*, 724 ; Coal Pulverisers, 715* ; Vibrating Screen and Portable Belt Conveyor, 716*
Fraser, T., on the Air-Sand Process of Coal Cleaning, 120
Fraunhofer and the Development of Optical Instruments, 90
French, Dr. J. W., on Glass Annealing, 609
— Society of Civil Engineers. See *Civil Engineers*
— See also *France*
Frequency Control, Tuning Fork, Rugby Wireless Station, 148*
Friction Clutch. See *Clutch* and *Motor-Car Details*
— Limiting, Solid Surfaces, Effect of Gases, Vapours and Liquids, 619*, 654*
Friction Rolling, Effect of Lubrication, 3
Frictional Resistance of Annular Waterways, 111. See LETTERS, 168 (*Erratum*, 292), 303, 352
— — of Ships. See *Ship Resistance*
Froude National Tank, Work of, 35
Fruit, Heat Evolution in Storage, 113
Fuel, Canadian Lignite, Moisture Contents, 431
— from Carbonisation Processes, 640
— Combustion of Solid Carbon, 730
— Consumption Tests, Marine Oil Engines, Report, 761*, 767*, 781, 799
— Economy Engineers, Institution of, Qualification for Membership, 174 ; Opening Meeting, Fluid Fuels, by Dr. A. E. Dunstan, 423 ; Inaugural Luncheon, 509 ; Proposed Amalgamation with Institution of Fuel Technology, 729. See 174
— — Need for, 729
— German Brown Coal, Occurrence, Working and Treatment, 744
— Injection, Compression-Ignition Oil Engines, 277*. See 207
— Liquid, Production from Coal, 423
— — See also *Oil Fuel*
— Low-Temperature Carbonisation of Coal. See *Coal, Low-Temperature Carbonisation*
— Motor, Roadside Measuring Pump for, Macleod, 552*
— — Supply for Aero Engine, 485. See 802
— — See also *Alcohol ; Gas ; Motor ; Paraffin Petrol ; Producer*
— Net and Gross Calorific Values, 678
— Oil. See *Oil Fuel.*
— Problems in California, 709
— and Power Committee, National, Formation, 271
— Pump. See *Pump*
— Research Board, Tests of Fusion Rotary Retort, 699
— — Station, Greenwich, Carbonisation of Holmside Coal in Vertical Retorts, 1*. See LETTERS, 72, 133 ; Experiments on High- and Low-Temperature Carbonisation, 166. See 131
— Smokeless. See *Coal, Low-Temperature Carbonisation*
— Technology, Institution of, Qualification for Membership, 174 ; Proposed Amalgamation with Institution of Fuel Economy Engineers, 729. See 174 ; Presidential Address, by Sir A, Mond, on Fuel Economy, 729 ; Modern Practice in Gas Manufacture, by T. Hardie, 729 ; Combustion of Solid Carbon, by Prof. R. T. Haslam, 730 ; Institution Dinner, 730 ; Brown-Coals, with Special Reference to German Practice, by Sir R. Redmayne, 744 ; Hydraulic Theory of Flow of Gas in Furnaces, by Prof. W. E. Groum-Grjimailo, 745 ; Carbonisation of Bituminous Coals at Low Temperatures, by S. McEwen, 746 ; Smoke and Public Health, by Dr. J. S. Owens, 746
— See also *Coal ; Oil ; Gas ; Peat ; Pulverised Coal*
Fulham Gas Works, Coal-Handling Plant, 103*
Functions, Axially Symmetric, Stationary Value, 610
Furnaces, Blast, Cement from, Standard Specifications, 383
— Blast, Testing Coke for, 13
— Boiler, Water-Screen Type, Pulverised Fuel Firing, 383*
— — Crosthwaite Self-Cleaning, Coal, 690
— — Wilton Steam-Jet Type, 691*
— — See also *Stoker*
— Electric, High-Frequency Induction, Ajax-Northrup, 50 ; Improved Form, 755
— — Muffle Type, Preparation of Beryllium, 673*. See *Errata*, 725
— Gas Flow in, Hydraulic Theory, 745
— Metallurgical, Buell Pulverised-Fuel Firing System, 813*
— Open-Hearth, Basic Process, Data, 13 ; Action of Sulphur, 629
— — Hearth, Comparisons of Sizes, 13
— — Hearth, Suspended Roof for, 494
— — Hearth, Use of High Manganese Materials, 629
Fused-Quartz Insulators, Prevention of Deterioration, 115
— — Use for Optical Flats, 764
Fuses, Cartridge, Aeroflex, 693*
Fusion Rotary Retort, Low - Temperature Carbonisation, Tests, 699
— Welding. See *Welding*

G.

GAINES Arch for Locomotive Fireboxes, 519*
Galusha, D. L., on Steam Power Stations, 61
Gammon, J. C., Ltd., Ferro-Concrete Arch Retaining Wall at Ahmedabad, 464*
Gardner, W. T., on Refractories in the Gas Industry, 352
Garrett, W. W., on Transmutation of Elements, 255
Gas, Acetylene. See *Acetylene*
— Appliances, Products of Combustion, 392
— Association, British Commercial, Annual Conference, 575
— Blow Pipe (Buck & Ryan), 390
— Carbon Dioxide. See *Carbon Dioxide*
— Coal, and Hydrogen, Use in Oil Engine, 685
— Combustion of. See *Gaseous Explosions*
— Cylinders, Heat Treatment of, Report, 184
— Distribution at High Pressures, Grays & Tilbury Gas Co., 409
— Dissolved in Metals, National Physical Laboratory Investigations, 68
— Domestic and Industrial Uses, 575
— Effect on Friction between Solid Surfaces, 619*, 654*
— Engineers, Institution of, Presidential Address, by C. F. Botley, 391* ; Report on Education Scheme , 392 ; Report on Products of Combustion from Gas Appliances, 392 ; Report on Influence of Size of Coal on Carbonisation, 392. See *Erratum*, 409 ; Reconstruction of Portslade Gas Works, by C. H. Rutter, 392 ; Carbonisation in Continuous Vertical Retorts, by T. F. E. Rhead, 407 ; Report on Refractory Materials, 408 ; Service to the Gas Consumer, by J. W. McLusky and W. B. McLusky, 408 ; Report on the Influence of Ash Constituents on the Carbonisation and Gasification of Coal, 408 ; Report on Gasification of Special Cokes in Steam, 408 ; Distribution of Gas at High Pressures by A. W. Sumner, 409
Gas Fired Furnaces. See *Furnaces*
— Flow in Furnaces, Hydraulic Theory, 745
— Heating, Domestic, Comparisons with Electric Heating, 196. See 206
— Ignition Point of, Internal-Combustion Engines, 12
— Industry, Education Scheme, 392 See 724
— — and the Electricity Bill, 392
— — Position and Prospects, 391
— — Service to Consumers, 408
— in Iron and Steel, Determination, 609, 678
— Kinetic Theory, and Molecular Aggregation, 701
— Light & Coke Co., Coal Handling Plant, Fulham Works, 103* ; Coal-Handling Plant, Beckton Works, 589*, 650*. See *Erratum*, 724 ; Training Centre for Apprentices, 724
— Making Problems in California, 709
— Manufacture, Coal Carbonisation, Influence of Size, 392. See *Erratum*, 409 ; Influence of Ash Constituents, 408
— — Gasification of Special Cokes in Steam, 408
— — Heat Economy in, 729
— — Refractory Materials for, 352, 408
— — Vertical Retorts, Birmingham Gas Department, 407
— — Vertical Retorts, Carbonisation of Holmside Coal, 1*. See LETTERS 72, 133
— Natural, in Northern Alberta, Report, 396
— — Temperature Fluctuations in Pipe Lines, 648
— Pipes, Cast-Iron Flanges for, Standard Table, 667
— Producer. See *Producer*
— Retorts, Hand Charging and Discharging Gear (Herbert Morris, Ltd.), 354*
— Turbine. See *Turbine, Internal-Combustion*
— Welding. See *Welding*
— Works, Beckton, Coal-Handling Plant, 589*, 650*. See *Erratum*, 724
— — Fulham, Coal-Handling Plant, 103*
— — Poole and Pitwines, Coal-Handling Plant, 770*
— — Portslade, Reconstruction, 392
— and Gas Works. See also PARAGRAPH INDEX
— See also *Acetylene ; Carbon Dioxide ; Carbon Monoxide ; Hydrogen ; Nitrogen ; Oxygen, &c.*
Gaseous Explosions, Closed Cylinders, National Physical Laboratory Investigations, 5
— — See also *Colliery Explosions*
Gasified Fuel, Ltd., Pulverised-Fuel Firing System, 294*
Gasoline. See *Petrol ; Engine, Petrol ; Carburettors ; Aeronautics*
Gauge, Dial, Depth Indicator, Brinell Tests, 784*
— Pitot-Tube Measurements, 59*, 122*
Gear Boxes, Motor-Car. See *Motor-Car Details*
— Cutting Machines. See *Machine Tools*
— Reversing. See *Reversing Gear*
— Spur, Strength of Stub Teeth, 316*
— Variable-Speed, Using Variable-Frequency Currents, 32*. See 99*, 159*
Geared Turbines, Marine. See *Marine Propulsion*
Gearing for Large Winding Engines, 671
— Worm, Production of Bronze Blanks by Centrifugal Casting, 320, 338*. See LETTERS, 395, 443
Genders, R., on the Macrostructure of Cast Metals, 88*
Generator, Acetylene. See *Acetylene*
— Electric for Aircraft, Brooks-Sayers System, 434*
— — and Diesel Engine, for Diesel-Electric Locomotive, 151*
— — High-Tension Direct-Current, Rugby Wireless Station, 147*
— — for Hydraulic Turbines, Development, 364
— — Motor-Driven, Multiple-Unit Train Controls, 432*
— — Production of Variable-Frequency Currents, 31*, 159*. See 99*
— — and Synchronous Motors, Paris Substations, 569*
— — Testing Chamber, Over-Speed Tests of Rotors, 824*
— — Wind-Driven, Tests at Harpenden, 150
— — See also *Turbo Generators*
Generating Machine, Gear. See *Gear* under *Machine Tools*
— Station. See *Power Station*
Geology, Surface Indications of Oil, 483
Geophysics, Earthquake Waves and the Earth's Central Core, 257
" George Livesey," Steam Tug, South Metropolitan Gas Co., 54
German Aviation Pocket Book (Review), 240
— — Year-Book (Review), 270
— Brown Coal, Occurrence, Working and Treatment, 744
— Competition and British Shipbuilding, 360
— Electrical Industry, Position of, 204
— Export Trade in Machinery, 784
— Navy, Development of Minelaying Vessels, 790
— State Railways, Locomotive with Three-Pressure Boilers, 198* See *Erratum*, 231
Germany, Economic and Financial Conditions, Report, 469
— Hydraulic-Turbine Construction, 708*
— Progress in Water Power Plants, 364. See 362
— Railway Electrification in, 424
— Water-Power Development and Inland Navigation, 362. See 364
Gewandhaus, Leipzig, Accoustic Properties, 638*. See 667
Giesler, C. F. R., Ltd., Vibrating Shears for Sheet Metal, 54* ; Electro-Magnetic Alternating-Stress Testing Machine, 722*
Gill Hydraulic Propeller for Ferry Boat, 167*
Gillett 8-h.p. Motor-Car, 565
Gillies, F. M., on Plate Mills, 630
Gilman, F. (B. S. T.), Ltd., Scaling Tools for Condenser Tubes, 611*
Girders, Continuous, Bending Moments and Deflections, Calculation, 63*
— See also *Beams ; Bridges ; Floors*
Glasgow, Royal Technical College, Calendar, 296
— Service to Gas Consumers, 408
Glass Annealing, Physics and Economics, 609
— Bottle Making Machines, Parison Moulds, 823
— Molten, Viscosity of, 68
— Plates, Friction Between, Effect of Gases, Vapours and Liquids, 619*, 654*
— — Rolled and Cast, Light Transmission, 775*
— Technology, Society of, Economics of the Annealing Process, by E. A. Coad-Pryor, 609 ; Glass Annealing, by Dr. J. W. French, 609 ; Presidential Address, by W. Butterworth, on the Work of the Society, 704 ; Further Note on Sillimanite as a Glass Works Refractory, by Prof. W. E. S. Turner, 823 ; Some Corrosion and Erosion Phenomena, and their Bearings in the Macrostructure of Refractories, by J. F. Hyslop, R. Gumm, and H. Biggs, 823 ; Note on the X-Ray Patterns of Mullite and Sillimanite, by J. F. Hyslop and H. P. Rooksby, 823 ; Note on the Design of Parison Moulds, by S. English, 823.
— Works, Use of Sillimanite as Refractory, 823
Glew, F. H., the Late, 77
Glossary, Standard, Electrical Engineering Terms, Criticism of, 223, 245. See LETTER 395
Glover-West Vertical Retorts, Carbonisation of Holmside Coal, 1*. See LETTERS 72, 133.
Glue-Jointing and Edge-Moulding Machine, 230*
Glycerine, Use in Hygrometry, 676
Glycerol Manufacture, Treatise (Review), 438
Gmünden, Ferro-Concrete Arch Bridge, 622*
Gold Mines, Modderfontein, Ventilating Fan for, 226*
— Production, Western Australia, 640
— Transmutation from Mercury, Negative Results, 255
Golden Seal Works, Explosion of Steam-Jacketed Pan, 456
Goldsmiths Company Extension, City and Guilds Engineering College, 543
Gorrie, R. M., on Irrigated Forest Plantations, 348
Gossell, S. & Son, Locomotive with Three-Pressure Boiler, 198*. See *Erratum*, 231
Gough, H. J., on Crystals of Aluminium under Reversed Torsional Stresses, 320. See 4, 422
Governing Gear, Plenty-Still Marine Oil Engine, 586*. See 537*
— — 20,000-kw. Turbo Generator for Bradford, 467*
Governors, Constant-Speed and Variable-Speed, (Monovel Governor Co., Ltd.), 87*
Grading Coal, Vibrating Screens for, 690*, 716*
Grain Elevating Plant, Pneumatic, 26
Graphical Study of Journal Lubrication, 141
Grate Area and Coal Consumption, Locomotives 666, 669, 813. See 674
— See *Furnace ; Stoker*
Graving Dock. See *Dock*
Gravitational Field, Variation of, 256
Gravity Determination, Pendulum Apparatus for, 271*
— Intensity of, Eötvös Torsion Balance, 101*
Gray, W., & Co., Ltd., Trials of S.S. " City of Bath," 8 ; Trials of S.S. " Firby," 15 ; Trials of S.S. " Otterpool," 210
Grays & Tilbury Gas Company, Gas Distribution at High Pressure, 409
Grease, Protection of Steel Machinery Parts from Rusting, 4
Great Western Railway, Coal Loading Plant, Port Talbot, 162
Green, R. & H., and Silley Weir, Ltd., Victor Oil Separator, 384*
Greenwich Fuel Research Station, Carbonisation of Holmside Coal in Vertical Retorts, 1* See LETTERS 72, 133 ; Experiments on High- and Low-Temperature Carbonisation, 168. See 131 ; Tests of Fusion Rotary Retort, 699
Gresley Valve Gear, Three-Cylinder Locomotive, Union Pacific Railroad, 414*
Grice, W. & Sons, Ltd., Air Heating Stove, 331
Griffiths' Door for Pit Trams, 693
Griffiths, Dr. E., on Latent Heat of Fusion of Metals, 13 ; on the Refrigerated Transport of Apples, 205. See LETTER 303
Griffiths, E. A., on the Refrigerated Transport of Apples, 205. See LETTER 303
Grinding, Coal, Bettington Pulveriser, 715*
— — Holbeck Pulveriser, 715.*
— — Kek Pulverisers for, 815*
— — Raymond Pulveriser, 381*
— Fine, Chemistry of, 280
— Machines. See *Machine Tools*
— Mill, Corn (Barford & Perkins, Ltd.), 86*
Grogan, J. D., on Silicon-Aluminium Alloys, 341*. See 318 ; Report on Age Hardening of Y Alloy, 605. See LETTER 731
Groum-Grjimailo, Prof., W. E., on Gas Flow in Furnaces, 745
Guarding of Machinery, Prevention of Accidents, 359
Guiana, British, Sluice Provision for Tidal Drainage, 682*
Guy, H. L., on Economic Value of Increased Steam Pressure, 643*. See 636
Gwyer, Dr. A. G. C., on Aluminium-Silicon Alloys, 458*, 492*. See 318
Gwynnes Engineering Co., Ltd., Centrifugal Pumps, Burnt Fen Drainage Scheme, 612*
Gyroscopic Compass, Development of, 792
— Vibration of Steam Turbine Discs, 581*
Gyro-Magnetic Electrons, Atomic Structure and Radiation, 225.

H.

HADFIELD, Sir R., on Metallurgical Development of Sheffield, 43
Hadfields, Ltd., Runaway Catch for Mine Tubs, 232; Armour-Piercing Projectiles, 722.* See 728
Hair Hygrometers, Investigations, 795
Haler, P. J., on Distortion of Case-Hardened Rings, 470*
Halifax, Service to Gas Consumers, 408
Hallam, J. P., on Centrifugal Pumps, 793
Hamburg Power Station, Diesel Engine and Generator, 117*; Trials, 555*
Hammers. See *Machine Tools*
Hankin, G. T., on Educational Possibilities of Films, 349
Hankins, G. A., on Spring Steels, 313
Hanson, Prof. D., on Properties of Spring Steels, 313; on Crystals of Aluminium under Reversed Torsional Stresses, 320. See 4, 422
Harbour Works in India, 566. See 573
— See also PARAGRAPH INDEX
Hardening Metals. See *Heat Treatment* under *Metallurgy*
Hardie, T., on Modern Gas Manufacture, 729
Hardness Tests. See *Tests* (*Materials*)
Harland Wolff, Ltd., Union Castle Motor Liner "Carnarvon Castle," 21*; Steam Tug "George Livesey," 54; Shallow-draught Oil Tanker "Ambrosio," 137; Launch of M.S. "Apapa," 304; Launch of M.S. "Koolinda," 335; Launch of M.S. "Alcantara," 418; Trials of M.S. "Accra," 437; Launch of Floating Crane "London Mammoth," 677
Harmonics, Voltage, Effect in Power-Factor Correction by Condensers, 216*, 223
Harms & Co., Arc-Welding Controller, 176*
Harpenden, Tests of Wind-Driven Electric Generators, 150
Hartley Bank Colliery, Boiler Explosion, 245
Hartmann, Dr. J., Air-Jet Acoustic Generator, 256
Harvey & Holford Oil Separator, 29*. See 7
Haslam, Prof. R. T., on Combustion of Solid Carbon, 730
Haslam & Stretton, Ltd., Hughes Pit-Prop Hoist, 692*
Hatfield, Dr. W. H., on Resistant Sheets for Chemical Engineering 112. See 144
Hathorn, Davey & Co., Ltd., Pumping Engine, Walton Station, Metropolitan Water Board, 41*; Helivane Pump, 83*
Haulage Gears, Colliery, Compressed-Air and Electric, 689*
— — Colliery, Compressed-Air Motor for, 689*
Haven, W. A., on Coke Testing, 13
Havre, 200-ton Electric Floating Crane, 327
Hawksley Lecture on Photo-Elasticity, 605
Hawthorn, Leslie & Co., Ltd., Launch of S.S. "Rohna," 265; Trials of S.S. "El Amir Farouq," 312; Diesel Engines, M.S. "Cape York," Report on Trials, 761*, 767*, 781, 799; Trials of S.S. "Rohna," 769
Hay, Artificial Drying in Stacks, 591
Hayward, Prof. C. R., on Action of Hydrogen on Copper, 520*. See 320
Head, Net, Hydraulic-Turbine Tests, Definition of, 441
Head, Wrightson & Co., Aerial Masts, Rugby Wireless Station, 279*
Heat Balance, Werkspoor Marine Oil Engine, 799. See 764, 781
— Conductivity, Iron and Steel, Investigations, 302, 306*
— — Tests, National Physical Laboratory, 69*, 113
— Economy in Gas Manufacture, 729
— Engines. See *Engines*; *Turbines*; *Aeronautics*
— Evolution from Fruit in Storage, 113
— Radiation Measurements, Rapid-Acting Bolometer, 676
— Specific. See *Specific Heat*
— Transmission, High-Speed Economisers, 592*. See LETTERS 672, 701
— — by High-Pressure Steam, Locomotive Boiler, 198*. See *Erratum*, 231
— Treatment of Metals. See *Metallurgy*.
— Waste. See *Waste Heat*.
Heater, Feed-Water. See *Feed-Water Heater*
Heating Curves, Alloys. See *Metallurgy*
— Domestic, Gas and Electric, Comparisons, 196. See 206
— of Factories, Reports, 102
— Feed-Water, Design of High-Speed Economisers, 592*. See LETTERS 672, 701
— — Water, Multi-Stage Bleeding System, 61
— Pipe, Steam, Failure of, 387
— — Steam, Steel, with Wound-on Gills, 660*
— Steam, Supply from Power Stations, 603
— Stove, Air, Domestic and Workshop Use, 331
Heaviside Layer, Effect in Wireless Telegraphy, 443*, 487
Heilbron, Prof. I. M., on the Berginisation of Fish-Liver Oils, 764
Hele-Shaw, Dr. H. S., on Oil Separators for Bilge and Ballast Water, 28*. See 7. See LETTERS 72, 132, 209, 241
Helical Gears. See *Gears*
— Turbines. See *Turbines*
Helium, Combination with Mercury, 239
— Oxygen Mixtures, Use in Diving, 678
Helivane Pump for Low Heads, 83*
Hematite Prices. See *Metal-Price Diagrams*
Henschel & Sohn, Locomotive with Three-Pressure Boiler, 198*. See *Erratum*, 231
Henshaw, P. B., on Aero-Engine Valve Steels, 698
Herbert, A., Ltd., 6-in. Relieving Lathe, 60*
Hercules Aeroplane, Air Route to Egypt and India, 820
Herring Drifter "Veracity" with Diesel Engine, 334
Hetch-Hetchy Water Supply, San Francisco, 63*, 94*, 219*, 283*, 410*, 497*, 621*, 683*
Heteroptic Shutter for Stroboscopes, 686
Higgs Motors, Star-Delta Starter, 656*
High Frequency. See *Electric* and *Furnace*
— Speed Steel. See *Steel*
— Temperature Tests. See *Tests* (*Materials*)
Highways. See *Roads*
Hiley, W. E., on Financial Return from Forestry, 347
Hilger, A., Ltd., Recording Torsion Dynamometer, 764*
Hinchley, Prof. J. W., on Fat Extraction by Solvents, 131
History of Science, Link between Sciences and Humanities, 348
H.M.SS. See under *Warships*
Hobs, Gear-Cutting, Machine for Measuring, National Physical Laboratory, 127*
Hodge, L. P., on Sluice Provision for Tidal Drainage, 682*
Hodgson, J. L., Calculation and Measurement of Air Flows in Mines, 58*, 122*
Hoehn, M., Report on Riveted and Welded Joints, 489
Hoffmann, G. H., Further Research on H.M.S. "Wolf" Experiments, 191*, 251*
Hoist, Hughes, for Pit-Props, 692*
— Electric Brakes for, 435*
— See also *Cranes*; *Transporters*; *Telphers*
Holbeck Coal Pulveriser, 715*
Holes and Fillets, Stress Concentration Produced by, 222, 240
Holland, Maurits Colliery, Ferro-Concrete Pit-Head Frame, 258*
— Railway Electrification in, 425
— Water Power Development and Inland Navigation, 363
Holloway Brothers (London), Ltd., Ferro-Concrete Road Bridge, Caversham, 343*
Holman & Co. (Engineers), Ltd., Reciprocating Shears for Sheet Metal, 331
Holmside Coal, Carbonisation in Vertical Retorts, 1*. See LETTERS 72, 133
Holt & Co., A., Trials of M.S. "Orestes," 149
Homogeneous Chemical Reactions, Mechanism of, British Association Discussion, 288
Honda, Prof. K., on the Change from Austenite to Troostite, 371*; on Tensile and Notched-Bar Tests, 398*
Honours List, Birthday, Engineers in, 50
Hoover Potato Digging Machine, 766*
Hopper Dredger. See *Dredger*
— Feeder, Travelling, for Belt Conveyors, Beckton Gas Works, 650*. See 589*
— Weighing Machine for Coal (W. & T. Avery, Ltd.), 653*
Horsburgh, Dr. E. M., on Wire for Ropes, 542
Horner, F., on Machine-Tool Alignment, 647*, 676*
Houldsworth, Dr. H. S., on Thermal Expansion and Transformation of Silica, 386
Hours of Labour. See *Labour*
House Refuse, Disposal of, 50, 79, 80. See LETTER 115
Housing Schemes, L.C.C., Building Construction Methods, 140, 249
Hovgaard, Prof. W., on Elastic Deformation of Pipe Bends, 821
Howard, J. & F., Ltd., Potato Digging Machine, 85*
Howarth, H. A. S., on Journal Lubrication, 141
Howden, T. C., & Co., Depth Indicator for Brinell Tests, 784*
Howe, Prof. G. W. O., on the Standard Glossary of Electrical Engineering Terms, 245. See 223, 395
Huber, L. W., on Fan Operating Characteristics, 121
Hudson, J. F., on the Distribution of Technical Literature, 423
— River, Bear Mountain Bridge, Cable Construction, 803*
Hughes, Dr. E., on Power-Factor Correction, 216*. See 223
— Hoist for Pit-Props, 692*
Human Ear, Acoustic Properties, 606
Hume Pipe Co. (Aust.), Ltd., Ferro-Concrete Poles, 416*
Humidity and Temperature of Air in Factories, 102
Humphrey-Sandberg Clutch, Motor-Car Gear Box, 646*
Hungary, Water Power Development and Inland Navigation, 362
Hunt, C. W. Co. Inc., Vibrating Screen, 304
Hunter, T. B., on H.M. Dockyard, Rosyth, 596
Hurricane, Florida, Effect on Buildings, 711
Hydraulic Accumulator, Pneumatically Loaded, for Forging Press, 550
— Cement, Determination of Free Lime, 705*
— Machine Tools. See *Machine Tools*
— Phenomena of Movable Weirs, 54*, 701
— Power Plant. See *Power Plant*
— — Supply, Manchester, Centrifugal Pumps for Pressure Boosting, 793
— Press. See *Press* under *Machine Tools*
— Pumps. See *Pump*
— Separator for Coal, Draper, 719
— Testing Laboratory, Verkstaden Kristinehamn, Sweden, 374*, 405*, 439*
— Theory, Gas Flow in Furnaces, 745
— Turbines. See *Turbines*; *Pelton Wheels*; *Power Plant*.
Hydraulics, Design of Main Sewers, 81
— Discharge from Culverts, University of Iowa Experiments, 653
— Flow of Water in Pipes and Conduits, Use of Reynold's Number, 474*
— Frictional Resistance of Annular Waterways 111. See LETTERS 168 (*Erratum* 292), 303, 352
— Measuring Weir, Hydraulic-Turbine Testing Station, 405*
— Resistance to Water Flow in Corrugated Pipes, 115
— Text Book on (Review), 701
— See also *Hydrodynamics*; *Irrigation*; *Water*
Hydro-Aeroplane. See *Seaplane* under *Aeronautics*
— Electric Power Plant. See *Power Plant*
Hydrodynamics, Fluid Flow round Rotating Cylinder, 34*
— See also *Hydraulics*; *Ship Resistance*
Hydrogen, Action on Copper, 320, 520*
— Decarburisation of Iron and Steel by, 313, 461*
Hydrogen, Specific Heat of, 650*
— Sulphide Poisoning, Texas Oilfields, 610
— Use in Oil Engine, 685
Hydrogenation in Organic Analysis, 288
Hydroliser for Conditioning Wheat, 27*
Hydrolysis by Polarised Light, 289
Hygiene, Smoke and Public Health, 746
Hygrometers, Hair, Investigations, 795
Hygrometry, Use of Glycerine in, 676
Hygroscopic Properties of Wool Fibres, 256

I.

ICE Fields, Navigation in, Progress, 792
— See also *Refrigeration*
"Idomeneus," M.S., Trials, 326
Ignition of Firedamp by Explosives, 227
— Magneto, Reciprocating-Armature Type, Petrol Engine for Concrete Mixer, 718*
— Oil Fuel, in Diesel Engines, Experiments on, 364
— Point of Gases, Internal-Combustion Engines 12
Igranic Electric Co., Ltd., Solenoid Shoe Brake, 436*
Illumination Research, Reports on, 774*
— Terminology of, 774*
— Tests of Enamelled-Steel Reflectors, 775*
"Imanta," Mine Trawler, Latvian Navy, 516. See 364
Impact Loads, Motor Wagons, with Solid and Pneumatic Tyres, 697
— Tests. See *Tests* (*Materials*)
Impedances, Input, Thermionic Valves, 756
Imperial Airways, Ltd., Air Service to Egypt and India, 820
— College of Science and Technology, Royal Scholarships and Studentships, 106; Department of Aeronautics, Prospectus, 478; Goldsmiths Company Extension, 543
— Conference and Co-Ordination of Research, 665
Import Trade. See *Trade*
Impulse Turbines. See *Turbines*
"Inanda," S.S., Stop-Valve Explosion, 372
Incandescent Lamps. See *Lamps* under *Electric*
Index, Engineering, American Society of Mechanical Engineers, 175
India, Ahmedabad, Ferro-Concrete Arch Retaining Wall, 464*
— Air Service to, 820
— Bombay Water Supply, Tansa Completion Works, 314*
— Engineering Work in, 566, 573, 613. See *Erratum*, 600
— Punjab, Irrigated Plantations in, 348
— Rubber. See *Rubber*
Indian Import Trade Statistics, 369
— Railways, Majex Coupler Transition Device, 631*
— — Report on Track Stresses, 252
— — Workshop Management, Report, 635
Indicator, Carbon-Dioxide, Illuminated-Dial Cambridge, 786
— Depth, Dial Gauge, for Brinell Tests, 784*
— Diagrams, Diesel Engine for Dragline Excavator, 325*
— Optical, Limitations and Defects, 727
Induction Furnace. See *Furnace, Electric*
— Motor. See *Motor, Electric*
— See *Electric*
Industrial Accidents. See *Accidents*
— Administration, Introduction (Review), 426
— Agreements and Disputes. See *Labour*
— Alcohol. See *Alcohol*; *Motor Fuels*
— Chemistry. See *Chemistry*
— Dust Respirators, Investigations, 106
— Economics, Monopolies of Materials, 129
— — See also *Labour*
— Efficiency and Statistical Methods, 765, 778
— Fatigue. See *Labour*
— Furnaces. See *Furnaces*
— Management. See *Works Management*
— Notes. See *Labour Notes* under *Labour*
— Research. See *Research*
— Situation in Chile, Report, 110
— Statistics, Publication of, 47
— Unrest. See *Labour*
— Uses of Aircraft, 776
— Waste, Elimination of, 112
Industries, British and Continental, Comparisons of Working Conditions, 137
— — Economic Position, American Investigations, 512
— Chemical, Monopolies of Raw Materials, 129
— German, Condition of, 469
— of Newfoundland, Report on, 48
— See also *Trade* and PARAGRAPH INDEX
Industry, Application of Research in, 112
— Chemical, Refrigeration in, 773
— Co-Partnership in. See *Labour*
— Electrical, British, Position of, 541, 702. See LETTER 599
— — German, Position of, 204
— Engineering, British, Economic Position, 607*
— — Effect of Coal Dispute, 391
— Gas, Position and Prospects, 391
— Importance of Science, 171. See 175
— Iron-Ore Mining, Sweden, Development, 302
— — and Steel, Swedish, Development, 301
— — and Steel, Swedish, Notes on Jernkontoret, 301
— Metallurgical, Ancient and Modern Methods, 317
— Mining, Co-Partnership in, 289
— Motor Car, Benefits to the Community, 451
— Palm Oil, West African, Position of, 330
— Shipbuilding, British and German Competition, 360
— Sulphuric Acid, Position of, 129
Information Bureaux, Association of, Report of Conference on, 334; Distribution of Technical Literature, by J. F. Hudson, 423
Inland Navigation. See *Navigation*; *Canals*; *Rivers*, &c.
Inspection, Dams, Embankments and Reservoirs, Proposed Legislation, 793
Installation Diagrams and Electric Circuits (Review), 143
Institute of Transport. See *Transport*
— See *Institutions*
Institution, Royal. See *Royal Institution*
— Technical and Scientific. See *Aeronautical Society, Royal*; *Agricultural Engineering, Institute of*; *Arts, Royal Society of*; *Automobile Engineers, Institution of*; *British Association*; *Ceramic Society*; *Chemical Engineers, Institution of*; *Chemical Industry, Society of*; *Civil Engineers, American Society of*; *Civil Engineers, French Society of*; *Civil Engineers, Institution of*; *Civil Servants, Professional, Institution of*; *Diesel Engine Users' Association*; *Engineers and Shipbuilders in Scotland, Institution of*; *Electrical Engineers, Institution of*; *Engineers, Institution of, Australia*; *Engineers' Society of Western Pennsylvania*; *Faraday Society*; *Fuel Economy Engineers, Institution of*; *Fuel Technology, Institution of*; *Gas Engineers, Institution of*; *Glass Technology, Society of*; *Iron and Steel Institute*; *Iron and Steel Institute, American*; *Junior Institution of Engineers*; *Locomotive Engineers, Institution of*; *Manchester Steam Users' Association*; *Marine Engineers, Institute of*; *Mechanical Engineers, American Society of*; *Mechanical Engineers, Institution of*; *Metals, Institute of*; *Meteorological Society, Royal*; *Mining and Metallurgical Engineers, American Institute of*; *Naval Architects, Institution of*; *Naval Architects, Japanese Society of*; *Naval Architects and Marine Engineers, Society of*; *North East Coast Institution of Engineers and Shipbuilders*; *Optical Society*; *Patentees, Institute of*; *Petroleum Technologists, Institution of*; *Physical Society*; *Physics, Institute of*; *Production Engineers, Institution of*; *Royal Institution*; *Sanitary Institute, Royal*; *South Wales Institute of Engineers*; *Supervising Electricians, National Association of*; *Transport Institute of*; *Water Engineers, Institution of*
Instruments, Optical, Work of Fraunhofer, 90
— Scientific, Ancient, Lewis Evans Collection, 223
— See also *Aeronautics*; *Electric*
Insulation. See *Electric*
Insurance, Workmen's. See *Labour*
Integrating-Type Photometer, at National Physical Laboratory, 126
Interferometer, Michelson, Use in Ether-Drift Experiments, 67, 257
— Patterns, Mathematical Analysis, 610
Internal-Combustion Engines. See *Aeronautics*; *Engines*; *Motor Cars*; *Motor Boats*; *Tractors*; *Turbines*
International Combustion, Ltd., Pulverised Fuel Plant, Billingham Synthetic Ammonia Works, 381*. See LETTER, 443; Pulverised Fuel System, Derby Power Station, 545*; Pulverised Fuel Installation, St. Pancras Power Station, 567*; Hum-mer Electric Screen, 690*
— Road Congress, Milan. See *Road Congress*
— Sleeping Car Co., Ltd., Sleeping Car, 751*, 785*
— Trade. See *Trade*
Inventions, Exhibition of, 516
— See also *Patents*
Inverted Syphon, Aqueduct, Hetch-Hetchy Water Supply, San Francisco, 621*
Ionised Layer in Atmosphere, Effect in Wireless Telegraphy, 443*, 487
Ions in a Crystal, Forces Between, 256
Iowa, University of, Experiments on Discharge from Culverts, 653
Irish Free State, Validity of Patents in, 111
Iron Alloys. See *Metallurgy* and *Steel*
— Armco, High-Temperature Tensile Tests, 4
— Carburisation and Decarburisation, 313, 460*
— Case Hardening. See *Heat Treatment* under *Metallurgy*
— Chromium Alloys, Effect of Nitrogen, 308*
— Corrosion. See *Corrosion*
— Foundry. See *Foundry*
— Furnaces. See *Furnaces*
— Heat Treatment. See *Metallurgy*
— Industry, Swedish, Development of, 301
— — United States, 60
— Manufacture. See *Furnaces, Blast*; *Metallurgy*
— Masters' Association, Swedish, Jernkontoret, Notes on, 301
— Ore. See *Ore*
— Oxide, Influence on Silica Refractory Materials, 385
— Oxygen-Free, Preparation of, 68
— Pig, Low-Phosphorus, Production in Birmingham, U.S., 631
— — Prices. See *Metal-Price Diagrams*
— Rolling Mills. See *Rolling Mills*
— Silicon Alloys, Constitution of, 369*
— and Steel, Determination of Gases in, 609
— — Import and Export Trade, 607*

Iron and Steel Institute :

Williams Prize, 817
Autumn Meeting, Stockholm :
Programme, 168
Opening Proceedings, 301
Visits, Excursions, &c., 302, 313
Reports of Discussions, 301, 313
Notes on the History and Organisation of Jernkontoret, by E. Kinander, 301
Development of the Swedish Iron Industry in the Last Thirty Years, by Prof. A. Johansson and A. Wahlberg, 301
Development of the Swedish Mining Industry during the Last Twenty-Five Years, by Prof. W. Peterson, 302
Anomalies in Heat Conduction as Investigated in Spherical Steel Specimens, by Prof. C. Benedicks, H. Backstrom and P. Sederholm, 306*. See 302
Testing of Hardened Steel, by A. Lundgren, 309*. See 303

Iron and Steel Institute—*continued.*
Mechanical Properties of Four Heat-Treated Spring Steels, by G. A. Hankins, Prof. D. Hanson and Miss G. W. Ford, 313
Effect of Nitrogen on Chromium and Iron-Chromium Alloys, by F. Adcock, 308*
Carburisation and Decarburisation of Iron, and Some Investigations on the Surface Decarburisation of Steel, by Prof. H. Johansson and R. von Seth, 460*. See 313
Constitution of the Iron-Silicon Alloys, by G. Phragmén, 369*
Direct Change from Austenite to Troostite, by Prof. K. Honda, 371*
Electro-Chemical Potentials of Carbon and Chromium Steels, by Prof. C. Benedicks and R. Sundberg, 430*
Physical Investigation into the Cause of Temper Brittleness, by Prof. J. H. Andrew and H. A. Dickie, 553*, 582*
Iron and Steel Institute, American, Data Relating to Basic Open-Hearth Steel Practice, by A. H. Diehl, 13; Comparisons of Open-Hearth Furnaces of Various Sizes, by S. J. Cort, 13; Notes on Coke Testing, by W. A. Haven, 13; Phosphorus in Wrought Iron, by S. H. Rawdon and S. Epstein, 13; Reinforced Concrete, by A. E. Linday, 46; Modern Steam Power Stations, by C. W. E. Clarke and D. L. Galusha, 61; Use of High Manganese Basic Pig-Iron and Manganiferous Ores in Open-Hearth Steel Manufacture, by A. W. Smith, 629; Action of Sulphur in Basic Open-Hearth Steel Practice, by A. N. Diehl, 629; Welding of Iron and Steel, by C. A. Adams, 629; Recent Developments in Plate Mills, by F. M. Gillies, 630; Production of Low-Phosphorus Pig-Iron in the Birmingham District, by E. K. Miller, 631; Corrosion of Structural Steel, by F. N. Speller, 631
— Tests. See *Tests (Materials)*
— Thermal and Electrical Conductivity, 302, 306*
— Wrought, Influence of Phosphorus, 13
— and Steel, Stainless (Review), 142
— — Works. See *Works*
— — See also PARAGRAPH INDEX
— Welding. See *Welding*
— See also *Cast Iron; Steel; Pig-Iron; Metallurgy*
— Works Practice, German Treatise (Review), 810
Irrigated Forest Plantations, Punjab, 348
Irrigation of Kalahari Desert, Report, 269
— Work in India, 613. See 754
— See also PARAGRAPH INDEX
Isle Maligne Hydro-Electric Power Plant, Construction, 747*
Italian Ferro-Concrete Bridges (Review), 438
— State Railways, Tests of Eternit Water Pipes, 702. See 270
Italy, Road Construction for Motor Vehicles, 412
— Water Power Resources, 567

J.

JACKMAN, D. N., on a Recording Torsion Dynamometer, 764*
James, C. W., The Late, 240
Japan, Railway Electrification in, 424
Japanese Society of Naval Architects. See *Naval Architects, Japanese Society of*
Japolsky, N. S., on Variable-Frequency Currents, 31*, 99*, 159*
Jeffreys, Dr. H., on Earth's Central Core, 257
Jenkin, Prof. C. M., on Small Refrigerating Plants, 205
Jenkins, C. H. M., on Cadmium-Zinc Alloys, 614*
Jernkontoret, Swedish Iron Masters' Association, Notes on, 301
Jervoise, Major F. H. T., on Underwood and Its Uses, 348
Jets, Carburettor, Tests at National Physical Laboratory, 4
— Steam. See *Nozzles*
Johanssen, Prof. A., on the Carburisation and Decarburisation of Iron and Steel, 460*. See 313
Johnson Valves, O'Shaughnessy Dam, San Francisco Water Supply, 96*
Joints, Riveted and Welded, Boiler Construction, 489
"Jolly Tar," Motor Tug, Trials, 218
Jolting Process, Refinement of Cast Iron, 240*
Jones, S. G., The Late, 136
Jones, W. R. D., on Magnesium and Its Alloys, 714
Journals. See *Bearings*
Joy Valve Gear, Engine for Steam Wagon, 81*
Julius, G. A., on Australian Manufacturing Policy, 160*
Junior Institution of Engineers, Presidential Address by Engineer Vice-Admiral Sir R. B. Dixon, on Progress in Marine Machinery, 736, 754; List of Awards, 741; Annual General Meeting, 802; Petrol and Its Substitutes, by Col. the Master of Sempill, 802
"Jylland," M.S., United Steamship Co., Ltd., 693

K.

KALAHARI Desert, Report on Irrigation, 269
Kaltbrunn-Watteril Tunnel, Fatal Accident from Locomotive Fumes, 556
Kaplan Turbines, Model Testing Plant, 406*. See 375*, 439*
— — German Construction, 708*
Karpen Concentration Cells and Second Law of Thermodynamics, 141
Kasheli South Bridge for Pipe Line, Bombay Water Supply, 315*
Kaye, Dr. G. W. C., on Acoustics of Public Buildings, 605*, 638*, 667*
Kearton, W. J., on Pressure Distribution in Steam Turbines, 365*. See 224
Kek Pulverising Mill for Coal, 815*
Kelvin Medal, Award to Sir C. A. Parsons, 478, 543
Kennedy, J. M., on Economics of Electrical Distribution, 214*. See 206
Kennedy, Sir A. B. W., Beam Experiments, Analysis of, 743*
Kennington and Morden Extension, Underground Railways, 327, 335
Kent, G., Ltd., Recording Venturi Motors, Resistance of Filter Beds, 123*
"Kenton" Cargo Steamer, Launch, 662
Kenyon, A. W., on Water Supply Finance, 793
Kestner Evaporators, Chemical Plant Exhibition, 144
Khandallah Substation, New Zealand, 794*
Kilns for Burning Refractory Materials, 385
— Cement, Refractory Linings for, 386
— Lime, and Gas Producer Combined, Reid System, 447*
Kimmins, Dr. C. W., on Educational Possibilities of Films, 349
Kinander, E., Notes on Jernkontoret, 301
Kinematograph Films, Educational Possibilities, 349
Kinetic Elutriation, Demonstration at British Association Meeting, 224
— Theory of Gases and Molecular Aggregation, 701
King's College, London, Prospectus, 508
"King George V," S.S., for Clyde, with High-Pressure Geared Turbines, 321*
King, Prof. P. V., on the Gyro-Magnetic Electron, 225
Klinger, Dr. P., on Gases in Iron and Steel, 609
Knapp, Z. E., the Late, 479
"Koolinda," M.S., Launch, 335

L.

L. & M. Carbonisation Process, Pulverised Smokeless Fuel for Boiler Firing, 720*
Laboratories, Research, University of Sheffield, 50
Laboratory, Hydraulic Testing, Verkstaden Kristinehamn, Sweden, 374*, 405*, 439*
— See also *National Physical*

Labour:
Accidents, Industrial. See *Accidents*
Atmospheric Conditions and Index of Comfort in Factories, 290
Australia and United States, Work and Wages in, 160*
Coal Dispute, Costs and Effects, 391
— — District Settlements in, 452
— — and the Electrical Industry, 702
— — Lessons from, 730
— — and Position of Labour, 139
— — and Trades Union Reform, 299
— Industry, Co-Partnership in, 289
— — Hours and Wages in, 190
Co-Operation in Industry, 289, 329
Co-Partnership in Coal Industry, 289
Economic Aspects of Labour Outlook, 289
Factory Accidents. See *Accidents*
Hours and Wages, Colliery Industry, 190
Industrial Accidents. See *Accidents*
— Disputes, Abuse of Trade Union Privileges, 730
— Economics, Restriction of Output, 290
— — Wages and Production Costs, 47, 112
— — Wealth, Virtual Wealth and Debt (Review), 760
— Fatigue, Machine Tool Design and Ease of Operation, 513
— — Research Board, Reports on Heating and Ventilating of Factories, 102; Work of, 481
— Statistics, Publication of, 47
Industries, British and Continental, Comparisons of Working Condition, 137
— — Economic Position, American Investigations, 512
Industry, Co-Operation in, 289, 329
Insurance, Unemployment. See *Unemployment* (below)
Labour Notes, 22, 39, 73, 116, 146, 177, 210, 229, 273, 293, 335, 353, 394, 428, 457, 487, 518, 548, 580, 597, 642, 658, 703, 734, 753, 783, 812. See PARAGRAPH INDEX
— Outlook, Economic Aspects, 289
Production Costs and Wages, 47, 112
Safety Regulations in Factories, Report, 359. See 433
Strikes, Abuse of Trade Union Privileges, 730
— and Publication of Balance Sheets, 47
Textile Industry, Wages Deductions for Bad Work, 821
Trade Unions, British and American, Comparisons, 512
— — Congress, Presidential Address on Co-Operation in Industry, by A. Pugh, 329
— — Privileges and Avoidance of Industrial Disputes, 730
— — Reform and the Coal Dispute, 299
— — and Restriction of Output, 290
Truck Acts and Wages Deductions for Bad Work, 821
Unemployment, Engineering and Allied Trades, 609*
— Insurance Act, Guide to (Review), 625
— Relief, Effect on Workers, 512
United States and Australia, Work and Wages in, 160*
Wages Deductions for Bad Work, Lawsuit, 821
— and Dividends, Relation, 48, 112
— and Hours, Colliery Industry, 190
— and Production Costs, 48, 112
Labour—*continued.*
Wages, Skilled and Unskilled Workers, 609*
— and Work, Australia and United States, 160*
Weaving Trade, Wages Deductions for Bad Work, 821
Lake Elgiau Dam, North Wales, Failure of, 484*. See 793
— Eleanor Dam, San Francisco Water Supply, 67*
— Vyrnwy, Liverpool Water Supply, Oswestry Filter Beds, 123*
Lamb, Prof. E. H., on Theory of Carbonic-Acid Refrigerator, 206
Lambeth Borough Council, Motor Vehicle for Street Watering, &c., 523*
Lamps, Electric. See *Electric*
— Safety, Electric, Cardiff Exhibition, 688
Lancashire Boiler. See *Boiler*
Lanchester Vibration Damper, Motor-Car Engines, 532*
Lancia-Lambda Motor Car, 535*
Land Drainage, British Guiana, Sluice Provision for, 682*
Lander, Dr. C. H., Tests of Fusion Rotary Retort, 699
Landing Stage, Floating, Seacombe Ferry, 557*
Lanoline, Protection of Steel Machinery Parts from Rusting, 4
Lark Pumping Station, Burnt Fen Drainage Scheme, 612*
Larner-Johnson Valves, O'Shaughnessy Dam, San Francisco Water Supply, 96*
Latent Heat of Fusion of Metals, 13
Lathes. See *Machine Tools*
Latvian Navy, Mine Trawlers and Submarines for, 516. See 364
Launch, Motor. See *Motor Boat*
Launching Arrangements, U.S. Aircraft Carrier "Lexington," 737*, 770*
Laundry Machinery, Recording Torsion Dynamometer, 764*
Law. See *Legal; Labour; Patents*
Lawaczeck Hydraulic Turbines, Theory of Design, 155*. See *Errata*, 232
Lea & Francis, Ltd., Gear Box with Constant-Mesh Gears, 646*
Lea, Prof. F. C., on Combined Torsional and Repeated Bending Stresses, 242*. See 222
Lead Alloys. See *Alloys* under *Metallurgy*
— for Chemical Plant, 113
— Prices. See *Metal-Price Diagrams*
— Production in United States, 441
Leather, Col. C., on Estate Saw Mills, 348
"Leconte de Lisle," S.S., Trials, 249
Lectures, Engineering, South Kensington Museum, 731
Lecture Halls, Acoustic Properties, 605*, 638*, 667*

Legal:
Building Regulations, Factory and Workshop Act, 121
Electricity Bill and the Gas Industry, 392
— — Provisions of, 636
— — and the Electricity Commissioners, 789
Fencing of Shafting and Pulleys (Atkinson versus L. & N.E. Railway), 359
Inspection of Dams, &c., Proposed Legislation, 793
Labour Legislation. See *Labour*
Patent Law. See *Patents*
Petrol-Measuring Pumps, Legislation on, 18
Riverside Mill Co., Ltd., *versus* Hart, Wages Deductions for Bad Work, 821
Truck Acts and Wages Deductions for Bad Work, 821
See also PARAGRAPH INDEX
Legislation. See *Legal; Labour; Patents*
Legros, L. A., Award of Grand Prix, French Society of Civil Engineers, 141; on Industrial Fatigue, 481
Leipzig Gewandhaus, Acoustic Properties, 638*. See 667
Lennard-Jones, Dr. J. E., on Forces between Ions in a Crystal, 256
Lennox, R. N., the Late, 578
Lenz & Jupp's Oil Separator, 29*. See 7
Letters to the Editor, 12, 54*, 72, 115, 132, 168, 209, 240, 271, 303, 352, 395, 427, 443*, 487, 545, 579, 599, 641, 672, 701, 731, 825. See LETTERS INDEX
Léval, J., on Ventilation of Turbine Rooms, 285*, 345*
Lewis Evans Collection, Ancient Scientific Instruments, 223
"Lexington," U.S. Aircraft Carrier, Launching Arrangements, 737*, 770*
Leyland Motors, Ltd., Trojan Motor Car, 504*
Libraries and Information Bureaux, Association of, Conference 334; Distribution of Technical Literature, by J. F. Hudson, 423
Liége District, Development of Zinc Industry, 318
— Meeting, Institute of Metals. See *Metals, Institute of*
Light Alloys. See *Alloys* under *Metallurgy*
— Emission from Atoms, 255
— Polarised, Hydrolysis by, 289
— — Stress Determination by. See *Optical*
— Transmission and Reflection by Pile of Plates, 90
— — Rolled and Cast Plate Glass, 775*
Lightalloys, Ltd., Tests of Alpax, 485
Lighting Gas. See *Gas*
— Terminology of, 774*
— Tests of Enamelled-Steel Reflectors, 775*
— See also *Lamps* under *Electric*
Lignite, Canadian, Moisture Contents, 431
— German, Occurrence, Working and Treatment, 744
Liljeblad, R., on Fatigue of Metals and Stress Concentration, 93. See LETTER 427
Lilla Edet Power Plant, Design of Turbines, 155*. See *Errata*, 232
Lime, Free, in Hydraulic Cement, Determination, 705*
— Kiln and Gas Producer Combined, Reid System, 447*
Limestone, Flotation from Siliceous Gangue, 45
— Microscopical Investigations, 223, 491*
Limiting Friction," Solid Surfaces, Effect of Gases, Vapours and Liquids, 619*, 654*
Limnoria, Protection of Timber against, 300
Lind, H., on Hydraulic Laboratories, Verkstaden, Sweden, 374,* 405*, 439*
Lindau, A. E., on Reinforced Concrete, 46
Lindeman, Prof. F. A., Photo-Electric Photometer, 403*
Line Spectra, Analysis, of 225
Liners. See *Steamers*
Linseed Oil, Extraction by Solvents, 131
— Use for Boiler-Scale Prevention, 415*
Liquids, Effect on Friction between Solid Surfaces, 619*, 654*
— Fuel. See *Oil Fuel.* See also *Alcohol; Benzol; Motor; Paraffin; Petrol*
Lister, R. A., & Co., Ltd., 16-18 h.p. Two-Cylinder Vertical Oil Engine, 85*; Bruston Auto-Pneumatic Water Supply System, Princes Risborough, 454*
Literature, 38, 98, 142, 176, 239, 270, 426, 438, 526, 561, 625, 655, 700, 777, 810. See LITERATURE INDEX
— Technical, Distribution of, 423
Lithgows, Ltd., Oil Tanker "Plume," 23; S.S. "Pulpit Point," 297, 510; Trials of S.S. "Plume," 326; M.S. "Cape York," Report on Marine Oil-Engine Trials, 761*, 767*, 781, 799
Litigation. See *Legal; Labour; Patents*
Little Giant Compound-Leverage Hand Brake, 263*
Liverpool, Seacombe Ferry, Floating Landing Stage and Roadway, 557*
— Water Works, Oswestry Filter Beds, 123* Report, 593
Ljungström Turbine, 5,000-7,000 kw., Tests, 494
"Llandaff Castle," S.S., Trials, 741
Lloyd's Register of Shipping, Statistics of Vessels under Construction, 111, 484; Statistics of Vessels Lost, 145, 327, 616, 817; Register Book, 248; Report, 393; Scholarships, 694
Loading Gauge, Influence on Locomotive Design, 482
Lobnitz & Co., Ltd., Launch of Dredger "Tolford," 364
Local Authorities. See *Municipal*
Lockouts. See *Labour*
Locomotive-Axle Grinding Machine, 400*
— Boilers, Scale Prevention, Filtrator Process, 415*
— Design, Influence of Loading Gauge, 482
— 1,000-h.p., Diesel-Electric (Baldwin Locomotive Works), 150*
— Electric, Advantages of Three-Phase System, 666, 670, 674, 813
— — Austrian Railways, 425
— — Battery, for Mines, Tests, 145
— — and Steam, Classification and Comparison, 666, 669, 674*, 813
— Engineers, Institution of, Restrictions due to Loading Gauges, by Sir S. Tritton, 482
— Fireboxes, Gaines Arch for, 519*
— 4-6-0 Type, Four-Cylinder, Nelson Class, Southern Railway, 473*
— Fumes, Fatal Accident from, in Swiss Tunnel, 556
— Road. See *Motor; Road: Tractor*
— Spring Control of Driving-Wheel Play, 508*
— Steam, Coal Consumption and Grate Area, 666, 669, 813. See 674
— — and Electric, Classification and Comparison, 666, 669, 674*, 813
— 4-6-0 Type, Three-Cylinder Compound, with Three-Pressure Boiler (Henschel & Sohn), 198*. See *Erratum* 231
— 4-12-2 Type, Three-Cylinder, for Union Pacific Railroad, Details of Construction, (American Locomotive Company), 291*, 413*, 519*, 598*
— See also *Railways* in PARAGRAPH INDEX
Lodge, Sir O., on the History of the Telephone, 19. See LETTER, 54
London, Congress of Chemists, 80, 112, 129. See 144
— County Council, Comparisons of Building-Construction Methods, 140, 249
— Docks, Street Traffic Congestion, 389
— Ferro-Concrete Construction Regulations, 752
"London Mammoth" Floating Crane, Launch, 627
— Midland & Scottish Railway, 40 ton Well-Wagon, 263; Dredger "Carronwater," 357
— & North Eastern Railway, Accelerometer Experiments, 396*; Dredger "Tolford" for Hull Docks, 364; Electric Train Collision, Manors Junction, Newcastle, 544; Report on Accident at Bishop's Stortford, 268; S.S. "Sheringham," 578
— Port of, Ferry Boat with Gill Hydraulic Propeller, 167*
— Refuse Disposal in, 79. See 50, 80
— Traffic, Cross-River, Report on, 754*, 760. See LETTER, 825
— — Report on, 389
— University College Engineering Scholarships, 137; Prospectus, 448; Centenary Appeal Fund, 730
— Underground Railways. See *Underground*
— Water Supply, Walton Filters and Pumping Station, 9*, 40*, 111
— Waterloo Bridge, Proposed Widening, 760
Longitudinal Strength of Ships, Research on "Wolf" Experiments, 191,* 251*
Lopulco System, Pulverised-Fuel Firing, Synthetic Ammonia Works, 381*; Derby Power Station, 545*; St. Pancras Power Station, 567*
Lorries. See *Motor Wagons; Tractors*
Loud Speakers and Microphones, Types, 605*
Loveridge, A. W., on Bending Moments and Deflections of Continuous Girders, 63*
Low-Temperature Carbonisation of Coal. See *Coal*
Lubrication, Effect on Rolling Friction, 3
— Bearings of Large Winding Engines, 672
— Friction between Solid Surfaces, Effect of Gases, Vapours and Liquids, 619*, 654*
— Journal, Graphical Study of, 141

Lubrication, National Physical Laboratory Investigations, 3
— Power Plant (Review), 239. See *Erratum*, 354
Lüders Lines on Steel Beams, 743*
Ludgate Bridge, Proposed, over River Thames, London, 754*, 760. See LETTER, 825
Lundgren, A., on Testing Hardened Steel, 309*. See 303
"Lynntown," S.S., Steam-Pipe Explosion, 617

M.

MACADAM. See *Roads* and *Tar Macadam*
Mac. See also *Mc*
Macassey, Sir L., on the Labour Outlook, 289
Macaulay, J. M., on Limiting Friction between Solid Surfaces, 619*, 654*
Machine Shops. See *Works* and *Machine Tools*
— Testing. See *Testing Machines* under *Tests* (*Materials*)

Machine Tools :
Alignment in Machine Tool Practice, 647*, 676*
Automatic Lathes, Methods of Securing Alignment, 648*, 676*
Axles, Locomotive, Grinding Machine for (Churchill Machine Tool Co., Ltd.), 400*
Band Saw, Wood, with Bevel Roller Feed Gear (A. Ransome & Co., Ltd.), 640*
— — Wood, for Re-sawing (J. Pickles & Sons (Engineers), Ltd.), 371*
Chuck Work, Methods of Securing Alignment, 677*
Drill, Sensitive (Exeter Tools and Machinery, Ltd.), 390
— Twist, with Oil Holes (R. Stock & Co.), 174
Drilling Appliances, Portable, Abel's Fixing Device, 516
— Machines, Gang, Heavy Duty (J. Archdale & Co., Ltd.), 380*
— — for Sydney Harbour Bridge (Wm. Asquith (1920), Ltd.), 164*
Edge Moulding and Glue Jointing Machine (Fay & Egan Co.), 230*
Forging Hammer, Electric, Using Variable-Frequency Currents, 99*, 160*. See 31*
— Press, Pneumatically-Loaded Hydraulic Accumulator for, 550
Gear-Cutting Machine, Hobbing and End Milling (Power Plant Co., Ltd.), 193*
— — Hobs, Machine for Measuring, National Physical Laboratory, 127*
Glue Jointing and Edge Moulding Machine (Fay & Egan Co.), 230*
Grinding Machine, Locomotive-Axle (Churchill Machine Tool Co., Ltd.), 400*
— — 8-in. Rotary Surface (Pratt & Whitney Co.), 305*
— — Surface, with Magnetic Tables (Naxos Union A.G.), 735*
— Wheels, Artificial, Advantages of, 433
— — Safety Precautions, 433
Hammer, Forging, Electric, Using Variable-Frequency Currents, 99*, 160*. See 31*
— Steam, Pile Driving, for Submerged Working, 189*
Hobbing and End-Milling Gear-Cutting Machine (Power Plant Co., Ltd.), 193*
Hobs, Gear-Cutting, Machine for Measuring, National Physical Laboratory, 127*
Hydraulic Press. See *Press* (below)
Lathes, Methods of Securing Alignment, 647*, 676*
— Relieving, 6-in. Plain (A. Herbert, Ltd.), 60*
— See also *Automatic* (above)
Locomotive-Axle Grinding Machine (Churchill Machine Tool Co., Ltd.), 400*
Machine Design, Comparisons of Geared and Cone-Pulley Drives, 513
— Shop Management. See *Works Management*
— — Manufacture of British Thomson-Houston Magnetos, 446*
— Tool Design, Developments in, 513
— — Design and Fatigue of Operators, 513
— — Group Driving and Individual Motor Drives, 513
— — Practice, Methods of Securing Alignment, 647*, 676*
— — Import and Export Trade, 607*
Machining Operations, Manufacture of British Thomson-Houston Magnetos, 446*
Milling Machines, Methods of Securing Alignment, 647*
Pipe-Wrench, Vulcan Chain (J. H. Williams & Co.), 68
Planing Machines, Electric Drive for (Metropolitan-Vickers Electrical Co., Ltd.), 437*
Press, Forging, Pneumatically-Loaded Hydraulic Accumulator for, 550
Relieving Lathe, 6-in. Plain (A. Herbert, Ltd.), 60*
Sand-Papering Machine, Three-Drum (Fay & Egan Co.), 230*
Saw, Automatic Cut-off, for Wood (Fay & Egan Co.) 231*
— Band, Wood, for Re-Sawing (J. Pickles & Sons (Engineers), Ltd.), 371*
— — Wood, with Bevel Roller Feed Gear (A. Ransome & Co., Ltd.), 640*
— Diamond, Maintenance of, 757
Shears, Reciprocating, for Sheet Metal (Holman & Co. (Engineers), Ltd.), 331
— Vibrating, for Sheet Metal (C. F. R. Giesler, Ltd.), 54*
Surface Grinding Machines with Magnetic Tables (Naxos Union A.G.), 735*

Machine Tools—*continued.*
Tool Room, British Thomson-Houston Company's Magneto Works, 446*
Turning Machines, Automatic. See *Automatic* (above)
Turret Lathes. See *Lathes* (above)
Vice, Hand or Machine, Universal, Revolving Head (Perkin & Co., Ltd.), 802
Woodworking Machinery, Band Saw with Bevel Roller Feed Gear (A. Ransome & Co., Ltd.), 640*
— — Band Saw for Re-Sawing (J. Pickles & Sons (Engineers), Ltd.), 371*
— — Belt Drives and Individual Motor Drives, 513
— — Glue-Jointing and Edge-Moulding Machine (Fay & Egan Co.), 230*
— — Sand-Papering Machine, Three-Drum (Fay & Egan Co.), 230*
— — Saw, Automatic Cut-off (Fay & Egan Co.), 231*
Wrench, Pipe, Vulcan Chain (J. H. Williams & Co.), 68
See also PARAGRAPH INDEX
Machine Vice. See *Vice* under *Machine Tools*
— Work. See *Machine Tools*
Machinery Failures, Report on, 203
— German Export Trade, 784
— Guarding of, Prevention of Accidents, 359
— Import and Export Trade, 607*
— Parts, Steel, Protection from Rusting by Grease, 4
Macleod Petrol Measuring Pump, 552*
Macrostructure of Cast Metals, Interpretation, 88*
Magnesium and Alloys, Properties and Uses, 714
— Use for Pistons, 142*
Magnetic Brakes, Types and Characteristics, 435*
Magneto Manufacture (British Thomson-Houston Co., Ltd.), 444*
— Polar-Inductor Type (British Thomson-Houston Co., Ltd.), 444*
— Reciprocating-Armature Type, Petrol Engine for Concrete Mixer, 718*
Mains, Electric. See *Cables* under *Electric*
— Sewers, Design of, 81
— Water, Installation and Maintenance, Italian Treatise (Review), 270. See 702
Majex Automatic Coupler, Transition Device, 631*
Malaria, Prevention of, Bats, Mosquitoes, and Dollars (Review), 144
— — Engineer's Work (Review), 239
Management of Works. See *Works Management*
Manchester College of Technology, Chair of Mechanical Engineering, 167; Prospectus, 448; Journal, 494
— Hydraulic Power Supply, Centrifugal Pumps for Pressure Boosting, 793
— Steam Users' Association, Memorandum on Oil Firing, 667
Mangahao Hydro-Electric Power Station, New Zealand, 794*
Manganiferous Materials, Use in Steel Manufacture, 629
Manley, J. J., on Union of Mercury and Helium, 289
Manometer for Pitot-Tube Measurements, 59*, 122*
Manometric Balance for Wind Channels, 34
Manors Junction, L. & N.E. Railway, Electric Train Collision, 544
Manton Colliery, Boiler Explosion, Report, 245
Manufacture, Scientific Methods in. See *Works Management*
Manure, Use of Sewage Sludge as, 50
Map Making by Aerial Photography, 595*, 777
Mapping, Aerial, of Burmese Forests, 360. See 595*, 777
Marine Auxiliary Machinery, Naval Progress, 754
— Boilers. See *Boilers*
— Engines. See *Engines*; *Turbines*; *Marine Propulsion*
— Engineers, Institute of, Annual Dinner, 565
— — and Naval Architects, American Society of. See *Naval Architects*
— Engineering, Naval Practice, Recent Progress, 736, 754
— — Studentships, Lloyd's Register, 694
— Propulsion, Diesel Engines, Comparisons with Steam Turbines, 17. See *Erratum*, 37
— — Diesel Engine, 2,900-h.p. Double-Acting Two-Stroke Worthington, 340*
— — Diesel Engines, Exhaust-Heated Boiler for, 761*
— — Diesel Engine for Fishing Vessels, Plenty-Still, 537*, 585*
— — Diesel Engine for Herring Drifter, 334
— — Diesel Engines, M.S. "Carnarvon Castle," 21*
— — Diesel Engines, Mixture Strength and Performance, 762*
— — Diesel Engines, Propulsive Efficiency in Motor Ships, 763
— — Diesel Engine, Werkspoor Type, Report of Oil Engine Trials Committee, 761*, 767*, 781, 799
— — Diesel Engines, Werkspoor Type, M.S. "Cape York," Report on Trials, 761*, 767*, 781, 799
— — Electric System, Naval Uses, 736
— — Electric System, using Variable-Frequency Currents, 32*. See 99*, 159*
— — Geared Turbines, Development in Navy, 736
— — Geared Turbines, High-Pressure Installation, S.S. "King George V," 323*
— — Naval Practice, Recent Progress, 736, 754
— — Oil Fuel for. See *Oil Fuel*
— — Turbine Rooms, Austrian Warships, Ventilation of, 285*, 345*
— — Turbines, Steam, Comparisons with Diesel Engines, 17. See *Erratum*, 37
— — Turbines, Steam, High-Pressure, S.S. "King George V," 323*
— — See also *Engines*; *Turbines*; *Propellers*; *Ship Resistance*; and PARAGRAPH INDEX
— Salvage. See *Salvage*
Marine Structures, Deterioration in Sea Water, Report, 300
— Turbines. See *Turbines, Steam*; *Marine Propulsion*
Marconi Beam System, Wireless Telegraphy. See *Telegraphy, Wireless*
Marconi, Senatore G., on Radio Communications, 543, 587; Early Transatlantic Wireless Telegraphy, 761
— Wireless Telephony Equipment, Basra, 272
Marietta Process, Increasing Yield of Oil Wells, 825
Markets. See *Trade* and PARAGRAPH INDEX
Markham, C., Battery Mine Locomotive Competition, Award, 145
Markwarts, A. H., on Hydro-Electric Power Plants in California, 80
Marris, H. C., on Statistics in Industry, 773
Marshall, Sons & Co., Ltd., 50-h.p. Vertical Oil Engine and 16-h.p. Portable Oil Engine, 52*; Flax-Scutching Machine, 86*; Vertical Oil Engine, 733*
Martin, Dr. G., on Chemistry of Fine Grinding, 289; on Refractory Linings for Cement Kilns, 386; on Air Elutriation, 773
Maschinenfabrik Augsberg-Nürnberg A.G., 15,000-h.p. Diesel-Engine Generating Set, Hamburg, 117*; Trials, 555*
Massachusetts Institute of Technology, Elastic Deformation of Pipe Bends, by Prof. W. Hovgaard, 821
Mast, Aerial, Rugby Wireless Station, 279*
— Mooring, Airships, at Detroit, 807
Materials, Raw, Monopolies of, and Industrial Economics, 129
— Road Construction, Standardisation of Tests, 411
— Strength of. See *Stress* and *Tests* (*Materials*)
Mathematical Analysis, Interferometer Patterns, 610
— Instruments, Ancient, Lewis Evans Collection, 223
Mathematics, Anido Slide Rule, 312
— Calculating Machines, South Kensington Museum, 657
— Stationary Value of Axially Symmetric Functions, 610
Mather & Platt, Ltd., Centrifugal Pumps, Walton Pumping Station, 42*
Matthews, R. B., on Electric Ploughing, 211*. See 206, 423; Electrically-Operated Farm, 447
Maurits Colliery, Ferro-Concrete Pit-Head Frame, 258*
Mavor & Coulson, Ltd., Chain Type Coal Cutters, 693*
McEwen, S., on Low-Temperature Carbonisation, 746
McGrew, F. R., on Corrosion of Oil Pipe Lines, 120
McKechnie's Oil Separator, 29*. See 7
McLellan, Prof. J. C., on the Spectrum of the Aurora, 20
McLusky, J. W. & W. B., on Service to Gas Consumers, 408
Mc. See also *Mac*
Measuring Diameters of Fine Wires, 127*
— Machine, Gear-Cutting Hobs, National Physical Laboratory, 127*
— and Mixing Plant for Wheat, 26
— Pumps, Petrol, Legislation on, 18
— — Roadside, for Petrol, Macleod, 552*
— Weir, Hydraulic Turbine Testing, 405*
Mechanical Engineers, American Society of, Hydro-Electric Power Plants in California, by A. H. Markwarts, 80; Friction in Annular Waterways, by Prof. D. H. Atherton, 111. See LETTERS, 168 (*Erratum*, 292), 303, 332; Graphical Study of Journal Lubrication, by H. A. S. Howarth, 141; Engineering Index, 175; Belt Drives and Individual Motor Drives for Machine Tools, by F. H. Penney, 513

Mechanical Engineers, Institution of :
National Certificate Scheme, 759, 792
Steam Nozzles Research Committee, Deductions from Work of, 495*
Suggestions for Increasing Utility of Institution, 825
Summer Meeting, Ipswich :
Modern Flour Milling Machinery, by Lieut.-Col. F. W. Turner, 26*, 55*, 91*
London Meetings. Winter Session :
The Late Mr. W. H. Allen, 531. See 332*
Presidential Address, by W. Reavell, on Production and Uses of Compressed Air, 549. See 531
Hawksley Lecture, by Prof. E. G. Coker, on Elasticity and Plasticity, 605
Electric Locomotives: A Method of Classifying, Analysing, and Comparing their Characteristics, by T. A. F. Stone, 674*. See 666, 669, 813
Annual Dinner, 759. See 792, 825
Report of Marine Oil Engine Trials Committee, 767*, 799. See 761*, 781.
North Western Branch :
Economic Value of Increased Steam Pressure, by H. L. Guy, 643*. See 636
Annual Dinner, 733
Report of Marine Oil Engine Trials Committee, Discussion, 781. See 761*, 767*, 799
Electric Locomotives by T. A. F. Stone, Discussion, 813. See 666, 669, 674*
Mechanical Engineering, National Certificates, Progress of Scheme, 759. See 792, 825
— — Progress of, 759. See LETTER, 825
Mechanical Stoker. See *Stoker*
Mechanics of Electron Collisions, 225
— Principles of, in Building Construction (Review), 176
Mediterranean Sea, Meteorological Observations, 795
Melotte Potato Digging Machine, 86*
Merchant Shipbuilding. See *Shipbuilding*
— Ships. See *Ships: Steamers*
Mercury, Combination of Helium with, 289
— Prices. See *Metal-Price Diagrams*
— Production of Gold from, Negative Results, 255
Merkel, Dr. F., on Calorific Values of Fuels, 678
"Mernoo," S.S. Launch, 327: Trials, 386
Mersey, River, Seacombe Ferry, Floating Landing Stage and Roadway, 557*.
Messel Memorial Lecture, on Research, 112
Metallography, Etching Reagents, Alloy Steels, 140
— Macrostructure of Cast Metals, Interpretation, 88*
— Steel, Direct Change from Austenite to Troostite, 371*
— Work of Dr. H. C. Sorby, 44
— See also *Metals*; *Metallurgy*; *Microphotographs*
Metallurgical Development of Sheffield, 43
— Industry, Ancient and Modern Methods, 317
— and Mining Engineers, American Institute of. See *Mining*

Metallurgy :
Alloy, Aluminium, Alpax, Tests at High and Low Temperatures, 485
— — Atmospheric Corrosion, 629
— — Cobalt, Sand Cast, 103
— — Containing Nickel, Constitution and Age Hardening, 345
— — Development, Effect of Motor-Car Industry, 451
— — National Physical Laboratory Investigations, 68
— — Protection from Corrosion by Anodic Oxidation, 208, 274*
— — Silicon, Production and Properties, 318, 336*, 341*, 458, 492*
— — Y, Age Hardening of, 605. See LETTER, 731
— Cadmium-Zinc, Constitution and Properties, 614*
— Copper. See *Brass*; *Bronze*; *Gun-metal, etc.*
— Interpretation of Macrostructure, 88*
— Iron-Chromium, Effect of Nitrogen, 308*
— — Silicon, Constitution of, 369*
— Magnesium, Properties and Uses, 142*, 714
Aluminium, Single Crystals, Behaviour under Reversed Torsional Stresses, 4, 320, 422, See 516
Armour-Plate Manufacture, History of, 728. See 722*
Assaying, Chelsea Polytechnic Classes, 326
Beryllium, Preparation and Properties, 68 673*. See *Errata*, 725
Blast Furnaces. See *Furnaces*
Brass. See *Brass*
Bronze. See *Bronze*
Carburisation and Decarburisation of Iron and Steel, 313, 460*
Case-Hardened Rings, Predicting Distortion, 470*
Cast Iron. See *Cast Iron*
Chromium and Iron-Chromium Alloys, Effect of Nitrogen, 308*
Copper, Action of Hydrogen on, 320, 520*
Corrosion of Metals. See *Corrosion*
Equilibrium Diagram, Iron-Silicon Alloys, 370*
Ferro-Manganese, Anodic Behaviour, 611
Foundry. See *Foundry*; *Moulding*
Furnaces, Electric. See *Furnaces*
— Metallurgical. See *Furnaces*
Heat Treatment, Age Hardening of Y Alloy, 605. See LETTER, 731
— — Annealing Hardened Steel, Effect on Mechanical Properties, 310*. See 303
— — Carburisation and Decarburisation of Iron and Steel, 313, 460*
— — Case-Hardened Rings, Predicting Distortion, 470
— — Gas Cylinders, Report on, 184
— — Nickel Steel, Effect of Mass, Criticism of Experiments, 109
— — Spring Steels, Effect on Mechanical Properties, 313
— — Steel, Cause of Temper-Brittleness, 553*, 582*
— — Steel, Direct Change from Austenite to Troostite, 371*
— — Tempering Hardened Tool Steel, Effect on Properties, 303, 309*
— — Wrought-Iron Chains, 4
Iron Manufacture. See *Furnaces, Blast*
— Ore. See *Ore*
— Works Practice, German Treatise (Review), 810
— Wrought, Influence of Phosphorus, 13
Lead for Chemical Plant, 113
Macrostructure of Cast Metals, Interpretation, 88*
Magnesium and Magnesium Alloys, Properties and Uses, 142*, 714
Metals, Cast, Interpretation of Macrostructure, 88*
— Dissolved Gases in, National Physical Laboratory Investigations, 68
— Latent Heat of Fusion, 13
— Refining Electrically (Review), 700
— Spraying, Treatise on (Review), 625
— Tests of. See *Tests* (*Materials*)
Metallurgical Industry, Ancient and Modern Methods, 317
Metallurgy, Chelsea Polytechnic Classes, 326
— Department, National Physical Laboratory, Work of, 68
Nickel, Use in Coinage, 345
Phosphorus, Influence on Wrought Iron, 13
Pulverised Coal, Use in Metallurgy. See *Pulverised Coal*
Pyrometers. See *Pyrometers*
Refining Metals Electrically (Review), 700
Refractories. See *Refractory Materials*
Rolling Mills. See *Rolling Mills*
Season Cracking, Arsenical Copper Tubes, 320, 365*
Steel, Absorption of Gases in, 678
— Armour-Plate Manufacture, History of, 728. See 722*
— Furnaces. See *Furnaces*
— Manufacture, Basic Process, Data, 13
— — Basic Process, Action of Sulphur, 629

Metallurgy—*continued.*

Steel Manufacture, Open-Hearth Process, Use of High Manganese Materials, 629
— — Open-Hearth Furnaces, Comparisons of Sizes, 13
— Works Practice, German Treatise (Review), 810
Tungsten Crystals, Deformation of, 320
— Effect of Working on Physical Properties, 676
— Metallurgy and Applications (Review), 625
Welding. See *Welding*
Wrought Iron, Influence of Phosphorus, 13
Y Alloy, National Physical Laboratory Investigations, 68; Report on Age Hardening, 605. See LETTER, 731
Zinc Industry, Liége District, Development, 318
— Retorts, Bibliography on, 464
See also *Iron and Steel Institute; Metals, Institute of; Metallography; Micrographs; Foundry;* and PARAGRAPH INDEX

Metallurgy and Mining, American Institute of. See *Mining*
Metals, Cast, Interpretation of Macrostructure, 88*
— Clad Airship, United States Navy, 806
— Corrosion of. See *Corrosion*
— Dissolved Gases in, National Physical Laboratory Investigations, 68
— Fatigue of. See *Alternating Stress* under *Tests (Materials)*
— Filament Lamps. See *Lamps* under *Electric*

Metals, Institute of:

Spring Meeting, London;
Interpretation of the Macrostructure of Cast Metals, by R. Genders, 88*
Autumn Meeting, Liége;
Programme, 77, 165
Opening Proceedings, 317
Autumn Lecture on Modern Metallurgy and Ancient Industries, by Dr. W. Rosenhain, 317
Reports of Discussions, 318, 345
Zinc Industry of the Liége District, by L. Boscheron, 318
Constitution and Structure of the Commercial Aluminium-Silicon Alloys, by Dr. A. G. C. Gwyer and H. W. L. Phillips, 458*, 492*. See 318
Mechanical Properties of Silicon-Aluminium Alloys, by J. D. Grogan, 341*. See 318
Further Experiments on the Behaviour of Single Crystals of Aluminium under Reversed Torsional Stresses, by H. J. Gough, S. J. Wright and Prof. D. Hanson, 320. See 4, 422, 516
Deformation of Tungsten Crystals, by Dr. C. J. Smithells, H. P. Rooksby and W. R. Pitkin, 320
Season Cracking in Arsenical Copper Tubes, by A. Pinkerton and W. H. Tait, 365*. See 320
Silumin and its Structure, by B. Otani, 336*. See 318
Bronze Worm-Gear Blanks Produced by Centrifugal Casting, by F. W. Rowe, 338*. See 330. See LETTERS, 395, 443
Constitution and Age-Hardening of Some Ternary and Quaternary Alloys of Aluminium Containing Nickel, by Miss K. E. Bingham, 345
Development of the Use of Nickel in Coinage, by Capt. F. R. Barton, 345
Comparison of Static and Dynamic Tensile and Notched-Bar Tests, by Prof. K. Honda, 398*
Action of Hydrogen on Hot Solid Copper, by Dr. C. S. Smith and Prof. C. R. Hayward, 520*. See 320
Constitution and Physical Properties of the Alloys of Cadmium and Zinc, by C. H. M. Jenkins, 614*

Metals, Latent Heat of Fusion, 13
— Price Diagrams, 23*, 178*, 292*, 456*, 578*, 704*, 826*
— Refining Electrically (Review), 700
— Spraying, Treatise on (Review), 625
— Sputtering of, on Thin Collodion Films, 676
— Structure of. See *Metallography; Micrographs*
— Trades Pension and Benevolent Society, 575
— Transmutation of, Negative Results, 255
— Welding. See *Welding*
— See also *Metallography; Metallurgy; Micrographs*
Meteorological Observations, Mediterranean Sea, 795

Meteorological Society, Royal:

Some Meteorological Observations Made at Sea, by N. K. Johnson, 795
Measurements of Temperature Near the Surface in Various Kinds of Soil, by N. K. Johnson and E. L. Davies, 795
Investigation on the Behaviour of Hair Hygrometers, by A. N. Puri, 795

Meteorology, Atmospheric Electricity, Recent Researches, 764
— Weather, Effect on Ferro-Concrete Structures, 46
Meters, Electricity, Tests at National Physical Laboratory, 115
— Venturi, Recording Resistance of Filter Beds, 123*
— Water, Installation and Maintenance, Italian Treatise (Review), 270
— See also *Electric*
Methane Explosions. See *Colliery Explosions*
Metrological Department, National Physical Laboratory, Work of, 126*
Metropolitan-Vickers Electrical Co., Ltd., Turbo-Alternator at Widnes, 15; Sydney Suburban Railway Electrification, 432*; Electric Drive for Planing Machines, 437*; Underground Automatic Substation, 485*; 41,000-kw. Turbo-Generator for Barton Power Station, 513; Equipment for New Zealand Hydro-Electric Power Plants, 794*; Over-Speed Testing House, 824*
Metropolitan Water Board, Walton Filters and Pumping Station, 9*, 40*, 111
— See also *London*
Meulen, Prof. H., on Hydrogenation in Organic Analysis, 288
Meuse, River, Water Power Development and Navigation, 363
Miami, Florida, Hurricane Damage, 711
Michell Thrust Bearings, 20,000-kw. Turbo-Generator, 467*
Michelson Interferometer, Use in Ether-Drift Experiments, 67, 257
Microphones and Loud Speakers, Types of, 605*
Microphotographs, Aluminium-Silicon Alloys, 336*, 337*, 341*, 459*, 492*
— Bronze, Effect of Casting Methods, 339*, 340*
— Building Stones, 402*. See 223
— Cast Iron, Showing Pearlite and Graphite, 429*
— Copper, Action of Hydrogen, 521*, 522*
— Iron-Chromium Alloys, Effect of Nitrogen, 309*
— — Silicon Alloys, 370*
— Steel, Granular Troostite, 372*
— Sulphur Bacteria, 251*. See 223
Microstructure of Metals. See *Metallography; Micrographs*
Midland Railway-Carriage & Wagon Co., Ltd., 40-ton Well-Wagon, 263*
Milan, International Roads Congress. See *Roads Congress*
Mill, Corn Grinding and Crushing (Barford & Perkins, Ltd.), 86*
— Pulverising, for Coal. See *Pulveriser*
— Rolling. See *Rolling Mills*
Miller, E. K., on Production of Low-Phosphorus Pig-Iron, 631
Miller, Prof. D. C., Ether-Drift Experiments, 67, 257
Milling Machinery, Flour, Modern, 26*, 55*, 91*.
— Machines and Cutters. See *Machine Tools*
Mineral Oils. See *Oils*
— Resources, Western Australia, 640
— See also *Coal; Mining; Ores;* and PARAGRAPH INDEX
Mines, Air Flow in, Calculation and Measurement, 58*, 122*
— Coal. See *Collieries*
— Drainage, Stream Pollution by, 419
— Electric Battery Locomotive for, Tests, 145
— Explosives in, Research Committee, Ignition of Firedamp by Explosives, 227
— Laying Cruisers, Development of, 790
— — Cruiser, H.M.S. "Adventure," 790
— Safety in, Research Board, Investigation of Detonation Velocities, 152*; Report on Flame-Proof Electrical Appliances, 166; Report, 611
— Trawlers "Imanta," and "Viesturs," Latvian Navy, 516. See 364
— Tubs, Griffiths' Door for, 693
— — Pressed Steel (Butterley Co., Ltd.), 692*
— — Runaway Catch for, 232
— United States Bureau of. See *United States*
— Ventilating Fans, Operating Characteristics and Performance Curves, 121
— — Fan, Steam-Driven, Modderfontein, 226*
— Winding. See *Winding*
— See also *Coal; Collieries; Mining; Ores; Winding;* and PARAGRAPH INDEX
Miners' Safety Lamps, Electric, Cardiff Exhibition, 688
"Mingary," Motor Yacht, Trials, 25
Mining Explosives, Measurement of Velocity of Detonation, 152*
— Industry, Co-Partnership in, 289
— — Uses of Compressed Air, 549
— Iron Ore, Sweden, Development of, 302
— Machinery, German Text Book (Review), 527
— and Metallurgical Engineers, American Institute of, Transportation of Petroleum, by C. Fitzgerald, 120; Evaporation in Transportation and Storage of Petroleum and Methods of Prevention, by J. H. Wiggins, 120; Corrosion of Pipe Lines and Protective Coverings, by F. R. McGrew, 120; Air-Sand Process of Cleaning Coal, by T. Fraser and H. F. Yancey, 120; The Mt. Union Sand-Flotation Plant for Preparing Bituminous Coal, by T. M. Chance, 120; Relation of Ash Composition to the Uses of Coal, by A. C. Fieldner and W. A. Selvig, 121; Explosibility of Coal and other Dusts in a Laboratory Steel-Dust Gallery, by V. C. Allison, 121; Operating Characteristics of Centrifugal Fans and Use of Fan-Performance Curves, by L. W. Huber, 121
— See also PARAGRAPH INDEX
Ministry of Transport. See *Transport*
Mitchell Conveyor and Transporter Co., Ltd., Railway Wagon Weighing Tippler at Preston, 69*; Coal-Conveying Plant at Fulham Gas Works, 104*; Coal-Handling Plant, Poole Gas Works, 779*
Mixed-Pressure Turbines. See *Turbines*
Mixing Machines, Concrete. See *Concrete*
— and Measuring Plant for Wheat, 26
— Pan, Steam-Jacketed, Explosion, Golden Seal Works, 456
Moccasin Hydro-Electric Power Plant, California, 499*. See 410*
Modderfontein, Mine-Ventilating Fan, 226*
Model Engineer Exhibition, 390
— Experiments, Wind Pressures on Buildings, 268
— — See also *Aeronautics; Ship Resistance*
— Crystal, Demonstration of, 256
— Hydraulic Turbine, Testing Plant, Verkstaden Kristinehamn, 375*, 405*, 439*
— for Stress Determination. See *Optical*
Moisture Contents, Canadian Lignite, 431
Moisture Effect on Friction between Solid Surfaces, 619*, 654*
Molecular Aggregation and Kinetic Theory of Gases, 701
Molecules and Electrons, Collisions between, Energy Transference, 255
Molybdenum, Cerium and Related Alloy Steels (Review), 98
Mond Nickel Co., Ltd., Buell Pulverised-Fuel System, 813*
Mond, Sir A., on Fuel Economy, 729
Monopolies of Raw Materials and Industrial Economics, 129
Monovel Governor Co., Ltd., Governors, 87*
Moore, R. St. G., the Late, 538
Mooring Mast, Airship, at Detroit, 807
Moorson Method of Tonnage Measurement (Review), 38
Morden Extension, Underground Railways, 335. See 327
Morgan, Prof. W., on Optical Indicators, 727
Morison, Sir T., on Training of Engineers, 575
Morris-Cowley Motor Car, Production of, 206
Morris, H., Ltd., Hand Charging and Discharging Gear for Gas Retorts, 354*; Salvage Crane for Motor Cars, 832*
Morris, J. (Fire Snow), Ltd., Fire Extinguisher Tests, 616
Morris Motors (1926), Ltd., Production of Morris-Cowley Car, 206; 15·9-h.p. Colonial Model Car, 564*
Morton, E., Investigations of Building Stones, 401*. See 223
Moss-Flower, Major T. J., the Late, 200
Motor Boat, Herring Drifter, with Diesel Engine, 334
— Car Accidents, Reduction of, Work of National Safety First Association, 574
— — 18-50 h.p. Bean, Details of Construction, 503*
— — Breakdowns, Salvage Crane for, 832*
— — Cowan's Early Steam, Experience with, 543
— — 50-150 h.p. Daimler Twelve-Cylinder, Details of Construction, 532*

Motor Car Details:

Back Axle, 18-50 h.p. Bean Car, 503*
— — Twelve-Cylinder Daimler Car, 534*
— — 7-ton Steam Wagon (Yorkshire Steam Wagon Co.), 83*
— — Trojan Motor Car, 506*
Brakes, Back Axle, Trojan Car, 506*
— Exhibition of Inventions, 516
— Front and Back Wheel, 18-50 h.p. Bean Car, 503*
— — and Back Wheel, Twelve-cylinder Daimler Car, 534*
Differential Gear, 7-ton Steam Wagon (Yorkshire Steam Wagon Co.), 83*
Engines. See *Engines, Petrol, Motor-Car*
Front Axle, 18-50 h.p. Bean Car, 503*
— — Twelve-Cylinder Daimler Car, 534*
— — 7-ton Steam Wagon (Yorkshire Steam Wagon Co.), 83*
Gear Box, Constant-Mesh Gears (Lea & Francis, Ltd.), 646*
— — Twelve-Cylinder Daimler Car, 534*
— — Epicyclic, Trojan Motor Car, 506*
— — 7-ton Steam Wagon (Yorkshire Steam Wagon Co.), 83*
Gearing, Worm, Production of Bronze Blanks by Centrifugal Casting, 320, 338*. See LETTERS 395, 443
Steering Gear, 18-50 h.p. Bean Car, 503*
— — 7-ton Steam Wagon (Yorkshire Steam Wagon Co.), 83*
— — Soc. H. & M. Farman, 565
— — Trojan Motor Car, 506*

Motor Cars, Electrical Equipment (Review), 778
— — Engineers. See *Automobile Engineers*
— — Engines. See *Engines, Petrol*
— — Exhibition, Cairo, 300
— — Exhibition, Olympia, 502*, 532*, 564*
— — Export Trade Statistics, 565
— — Fuels. See *Motor Fuels*
— — Gear Box. See *Motor Car Details*
— — 8-h.p. Gillett, 565
— — Industry, Benefits to the Community, 451
— — 16 h.p. Lancia-Lambda, 535*
— — Manufacturers and Traders, Society of, Annual Dinner, 565
— — Morris-Cowley, Production of, 206
— — 15·9 h.p. Morris-Oxford Colonial Model, 565*
— — 11-65 h.p. Riley, with Supercharger, 534*
— — Steering Gear. See *Motor-Car Details*
— — 14-45 h.p. Talbot, 535*
— — Taxation and Road Fund, 575. See 97, 792
— — Taxation Statistics, 97, 792. See 575
— — Traffic Statistics, 565
— — Trend of Design, 502
— — 12 h.p., Trojan, Details of Construction, 504*
— —7-h.p. Waverley, 565
— — See also *Motor Cycles;* and PARAGRAPH INDEX
— Compressed Air, Colliery-Haulage Gears, 689*
— Cycles, Design of, 453
— — Engines. See *Engines, Petrol, Motor-Cycle*
— — Paramount Single and Two-Seater Models (F. E. W. Patents, Ltd.), 454*
— — Panthette (Phelon & Moore), Ltd., 453*
— — Show, Olympia, 453*
— — Two-Cylinder, Two-Stroke Engine (Francis & Barnett, Ltd.), 454*
— Electric, for Collieries, Flameproof, Vent for 718. See 166
— — Direct Current, Starters for Small Powers (Brookhirst Switchgear, Ltd.), 179*
— — Field Regulation, Accelerating Relay, 181*
— — Individual Drives of Machine Tools, 513
— — Induction, Star-Delta Starter for (Higgs Motors), 656*
Motor, Electric Induct on Type (Electric Construction Co., Ltd.), 718
— — Induction Type, Synchronous, Paris Substations, 569*
— — Induction, Use of Variable-Frequency Current, 32*, 159*. See 99*
— — Methods of Braking, 435*
— — for Mines, Prevention of Flame Propagation by Perforated Plates, 166. See 718
— — Small, Standard Specification, 357
— — Sydney Suburban Railways, 432
— Fuels, Alcohol, Experiences with, 130
— — Measuring Pumps, Legislation, 18
— — Roadside Measuring Pump, Macleod, 552*
— — Supply for Aero Engine, 485. See 802
— Generator Sets, Induction Type, Synchronous Motors, Paris Substations, 569*
— — Set, Multiple-Unit Train Controls, 432*
— Internal-Combustion. See *Aeronautics; Engines; Motor Cars; Motor Boats; Tractors*
— Launches. See *Motor Boats*
— Lorries. See *Motor Wagons*
— Marine. See *Engines; Marine Propulsion; Motor Ships*
— Omnibuses and London Traffic, 389
— Paraffin. See *Engines, Oil*
— Petrol. See *Aeronautics; Engine, Petrol; Motor Boats; Motor Cars; Tractors*
— Ship "Accra," Trials, 437
— — "Alcantara," Launch, 418
— — "Apapa," Launch, 304
— — "Beljeanne," Trials, 326
— — "Barbara," Rotor System, Trials, 427
— — "Cape York," Report on Diesel Engine Trials, 761*, 767*, 781, 799
— — "Carnarvon Castle," Union Castle Line, 21*
— — "Dolius," Performance 185
— — "Idomeneus," Trials, 326
— — "Jylland," United Steamship Co., Ltd., 693
— — "Koolinda," Launch, 335
— — "Orestes," Trials, 149
— — Propulsive Efficiency of, 763
— — "Silverash," Trials, 489
— — "Storsten," Trials, 288
— — "Tacoma," Launch, 233
— — and Turbine Steamers, Comparisons, 17. See *Erratum*, 37.
— — See also *Marine Propulsion*
— Spirit. See *Motor Fuel*
— Tank Ship "Patella," Launch, 510
— Taxation Statistics, Ministry of Transport, 97, 792. See 575
— Tractors. See *Tractors*
— Traffic on Roads, Ministry of Transport Census, 412, 604
— Transport, Road Surfaces for, 607
— — See also *Road*
— Tug "Jolly Tar," Trials, 218
— — "Southland," Oil Engines for, 475*
— Vehicles, Road Damage by Steel Tyres, 271
— — Special Roads for, 412
— — for Street Watering and Fire Extinguishing, 523*
— Wagons, Impact Loads with Solid and Pneumatic Tyres, 697
— — Steam, Explosion Cylinder Casting, 617
— — Steam 7-ton (Yorkshire Steam Wagon Co.), 81*
— — See also *Tractors*
— Yacht "Chelsea," Trials of, 103
— — "Eros," Trials of, 175
— — "Mingary," Trials, 25
Mouchel, L. G., and Partners, Ferro-Concrete Road Bridge, Caversham, 343*
Moulding Fabrolite, British Thomson-Houston Company's Works, 447*
— and Vulcanisation of Rubber Articles, 721
— See also *Foundry*
Moulds, Parison, Glass-Bottle Making Machines, 823
Mount Wilson, Ether-Drift Experiments, 67, 257
Movable Weirs, Hydraulic Phenomena, 54*, 701
Mowing Machine, Horse-Drawn, (Ruston & Hornsby, Ltd.), 52*
"Moyallon," S.S., Launch, 164
Mucklow, G. F., on Hydrogen as Auxiliary Fuel in Oil Engine, 685; on Effect of Reduced Intake Pressure on Oil Engine, 686
Muir, Prof. F., on Overstraining of Steel by Bending, 743*
Mullite X-Ray Patterns, 823
Multiple-Arch Dam, Ferro-Concrete, Lake Eleanor, California, 67*
Multitubular Boilers. See *Boilers*
Municipal Work, Motor Vehicle for Street Watering, &c., 523*
Murrumbidgee River, Burrinjuck Dam, Flood Conditions, 168
Museum, Science, South Kensington. Extensions and Developments, 172; Calculating Machines, 657; Engineering Lectures, 731
Muspratt, Sir M., on the Sulphuric-Acid Industry, 129

N.

NALLA Adjustable Plugs and Sockets, Electric Fittings, 516
Napier & Miller, Ltd., Launch of S.S. "Waipiata," 209
Nathan, Sir F., on Industrial Waste, 112
National Afforestation and Small Holdings, 290
— Association of Supervising Electricians. See *Supervising Electricians*
— Certificates, Mechanical Engineering, Progress of Scheme, 759. See 792, 825
— — in Naval Architecture, 106, 694
— Fuel and Power Committee, Formation, 271
National Gas Engine Co., Ltd., 132-h.p. Twin-Cylinder Horizontal Oil Engine, 53*; Ram Pump, 53*

National Physical Laboratory, Report on Work, 3, 34*, 68*, 113*, 126*. Work of Froude National Tank, 35; Experiments on Heat Treatment of Nickel Steel, Criticisms, 109; Heat Treatment of Gas Cylinders, 184; Proposed Experimental Tank for Seaplane Research, 237; Investigations of Effect of Nitrogen on Chromium and Iron-Chromium Alloys, 308*; Investigations of Spring Steels, 313*; Investigations of Silicon-Aluminium Alloys, 341*. See 318; Investigations of Acoustics of Buildings, 605*, 638*, 667*; Investigations of Cadmium-Zinc Alloys, 614*; Research Work on Beryllium, 68, 673*. See *Errata*, 725; Investigations of Age Hardening of Y Alloy, 605. See LETTER, 731
— Radio Exhibition, Olympia, 330
— Safety First Association, Public Safety Congress, 574
Natskov Skiferft A/S., Trials of M.S. "Tacoma," 233
Natural Gas in Northern Alberta, Report, 396
— — Pipe Lines, Temperature Fluctuations, 648
Naval Architecture, International Certificates in, 106, 694
— — Scholarship, Institute of Naval Architects, 387, 694
— — Ventilation of Turbine Rooms, Austrian Warships, 285* 345*
— — "Wolf" Experiments Longitudinal Strength of Ships, Research, 191*, 251*
— — See also *Warships*

Naval Architects, Institution of:

Summer Meeting, Belgium:—
Report of Marine Oil Engines Trials Committee, 767*, 799. See 761*, 781
Scholarships and Certificates in Naval Architecture, 106, 387, 694
Reports of Discussions, 7, 51.
Visits, Excursions, &c., 7, 51
Ship Strain Observations with a Simple Instrument, by J. L. Taylor, 8
Marine Steam Turbine and Diesel Engine for Cargo Vessels, by Sir J. Biles, 17. See *Erratum*, 37.
Port of Antwerp, by K. Bollengier, 24*. See 7, 51
Oil Separators for Bilge and Ballast Water, by Dr. H. S. Hele-Shaw and A. Beale, 28*. See 7. See LETTERS, 72, 132, 209, 241
Institution Dinner, 51
Naval Architects, Japanese Society of, Gyroscopic Vibration of Steam Turbine Discs, by K. Suyehiro, 581*
— Architects and Marine Engineers, Society of, Naval Development of Floats for Aircraft, by Commander H. C. Richardson, 705*; Launch of United States Airplane Carrier "Lexington," by S. W. Wakeman, 737*, 770*; Corrosion of Ship Plates and Rivets, by W. Bennett, 796*
— Dockyard, Rosyth, Construction, 596
— Engineers, Status of, 18, 132
— Practice, Marine Engineering, Recent Progress, 736, 754
— and Shipping Annual, Brassey's, 1927 (Review), 810
— Warfare. See *Warships*
— Work, Uses of Compressed Air, 550
— See also *Warships*
Navigation, Echo Sounding, Admiralty Method, 792
— Gyroscopic Compass, Development of, 792
— in Ice Fields, Progress in, 792
— Inland, River Rhine Improvements, 173, 174. See 334
— — Towing Vessels for, 363
— — and Water Power Development, 361
— — and Water Power Exhibition, Bâle, 173
— — World Power Conference, 334, 361. See 173
— Physics in, 791
— Wireless Telegraphy in. See *Telegraphy, Wireless*
Navy, British. See *H.M.* under *Warships*
— Latvian, Mine Trawlers and Submarines for, 516. See 364
— United States. See *United States* under *Warships*
— See also *Naval*; *Warships*; and PARAGRAPH INDEX
Navvy, Steam. See *Excavating Machine*
Naxos Union A. G., Grinding Machines 735*
Neeser, R., on Definition of Net Head, Hydraulic Turbine Tests, 441
Nelson Class Locomotive, Southern Railway, 473*
Neuhof Power Station, Diesel Engine and Generator, 117*; Trials, 555*
Neumann, Prof. H., Experiments on Ignition of Oil Fuels, 364
New Conveyor Co., Ltd., Ball-Bearing Rollers for Belt Conveyors, 717*
— Zealand, Water Power Developments, North Island, 793*
Newcastle, Manors Junction, Electric Train Collision, 544
Newfoundland, Trade, Industries and Resources, Report on, 48
Newman, Sir G., on Engineers and Public Health, 48
Nickel-Aluminium Alloys, Constitution and Age-Hardening, 345
— Chromium Steel, Cause of Temper-Brittleness, 553*, 582*
— Steel, Heat Treatment of, Effect of Mass, Criticism of Experiments, 109
— Use in Coinage, 345
"Nidarnes," S.S., Launch, 419; Trials, 674
Nitrogen, Effect on Chromium and Iron-Chromium Alloys, 308*
Nixon, F. A., the Late, 53
Nobel Prize for Physics, Award, 787
Noetzli, F. A., Tests on Experimental Arch Dam, 562*
Non-Ferrous Metals. See *Metals*; *Metallurgy*
Normand, A., Société Anonyme des Chantiers et Ateliers, Mine Trawler and Submarine, Latvian Navy, 516. See 364
North-East Coast Institution of Engineers and Shipbuilders, Training of Engineers, by Sir T. Morison, 575
— Notes from, 15, 45, 77, 107, 137, 169, 201, 233, 265, 297, 327, 357, 387, 419, 449, 478, 509, 539, 571, 601, 633, 663, 694, 724, 756, 787, 817. See PARAGRAPH INDEX
Northern Alberta, Natural Gas and Petroleum in, Report, 396
Northrup High-Frequency Induction Furnace, 50
Northwest Engineering Company, Dragline Excavator, Diesel-Engine Drive, 324*
Norway, Water Power Development and Inland Navigation, 363
Norwich, Thorpe Electric Power Station, 576*
Notched-Bar Tests. See *Tests* (*Materials*)
Notes on New Books. See *Books* and LITERATURE INDEX
— See *Cleveland*; *North*; *South-West*; *South Yorkshire*; *Labour*. See also PARAGRAPH INDEX
Nozzles, Steam-Turbine, Deductions from Research Work, 495*
N.V. Algemeene Beton Co., Ferro-Concrete Pit-Head Frame, 258*

O.

Obituary:

Allen, W. H., 332*. See 531
Cavallier, C., 200
Cox, G. V., 327
Crawford, W. C., 677
Dissman, R., 642
Ellis, H., 816
Ensor, H. T., 296, 324
Glew, F. H., 77
James, C. W., 240
Jones, S. G., 136
Knapp, Z. E., 479
Lennox, R. N., 578
Moore, R. St. G., 538
Moss-Flower, Major T. J., 200
Nixon, F. A., 53
Roberts, Engr.-Capt. I., 600
Smith, J., 106
Szlumper, Sir J. W., 538
Tilden, Sir W., 752
Wade, W. R., 632
Walch, G. T., 752
Wilson, F. J., 448
Oertling, L., Eötvös Torsion Balance, 101*
Oil Bases, Classification of, 418
— Crude, Recovery from Sand, 409
— Dashpot, Motor-Starting Switch, 179*
— Engines. See *Engines, Oil*; *Motor Cars*; *Motor Boats*; *Tractors*
— Firing of Boilers, Memorandum of Manchester Steam Users' Association, 667
— Fish-Liver, Berginisation of, 764
— Fuel, Diesel Engines, Experiments on Ignition, 364
— — Use in Navy, 736
— Holes, Weakening Effect on Crankshafts, 203
— Linseed, Extraction by Solvents, 131
— Motors. See *Engines, Oil*; *Motor Cars*; *Motor Boats*; *Tractors*
— Palm, West African Industry, 330
— Petroleum, Development and Technology in 1925 (Review), 527
— — Surface Indications of, 483
— Pipe Lines, Corrosion of, and Protective Coverings, 120
— Separators for Bilge and Ballast Water, 7, 28*, 384*. See LETTERS, 72, 132, 209, 241
— Switches. See *Switchgear*
— Tank Steamer "Ambrosio," Shallow-Draught, Trials, 137
— — Steamer "British Governor," Trials, 624
— — Steamer "British Inventor," Trials, 233
— — Steaemr "Plume," Launch, 23
— — Steamer "Pulpit Point," Launch of, 297; Trials, 510
— — Steamer "Sucre," Trials, 169
— Tractors. See *Tractors*
— Wells, Increasing Yield by Compressed Air, 550, 825
— See also *Lubrication*; *Petroleum*
Oilfields, Texas, Hydrogen-Sulphide Poisoning in, 610
Oldham & Son, Ltd., Electric Miners' Lamp, 688
Olympia. See *Exhibition*
Omnibus, Motor. See *Motor Omnibus*
— Railless Electric, Bradford Corporation, 292
Open-Hearth Furnace. See *Furnaces*
Oilfields, Texas, Hydrogen-Sulphide Poisoning in, 610
Optical Flats, Use of Fused Quartz, 764
— Indicators, Limitations and Defects, 727
— Instruments, Work of Fraunhofer, 90
— Methods of Stress Determination, 605
— Society, Joseph Fraunhofer and the Development of Optical Instruments, by Prof. M. von Rohr, 90; Light Transmitted and Reflected by a Pile of Plates, by T. Smith, 90; Note on the Immutability of Transmissive Factors with Reversal of Light, by D. S. Perfect, 90; Analysis of an Interferogram, by R. Kingslake, 610; Stationary Value of Axially Symmetric Functions, by T. Smith, 610; Effect of Slightly Selective Absorption in the Paint used for Photometric Integrators, by J. W. T. Walsh and W. Barnett, 662; Accurate Method of Ascertaining Position of Focal Point of Optical System, by C. Beck, 662
— Systems, Determination of Focal Point, 662
Optics, Work of National Physical Laboratory, 114
Ore Flotation, United States, Statistics, 741
— Iron, Mining, in Sweden, Development, 302
"Orestes," M.S., Trials, 149
Organic Analysis, Use of Hydrogenation, 288
— Chemistry. See *Chemistry*.
Orifice Measurements Air Velocities in Mines, 122*. See 58*
Ormandy, Dr. W. R., on Sugar from Sawdust and Alcohol Motor Fuels, 130. See 144; on Berginisation of Fish-Liver Oil, 764
O'Shaughnessy Dam, San Francisco Water Supply, 94*
Oswaldkirk, Water Supply, from Borehole, 793
Oswestry Filters, Liverpool Water Supply, 123*
Otani, B., on Silumin and its Structure. 336*. See 318
"Otterpool," S.S., Trials, 210
Overhead Power-Transmission Lines, Mocassin Power Plant, California, 499*
Overseas Trade Department, Trade, Industries and Resources of Newfoundland, 48; Report on Industrial and Economic Situation in Chile, 110; Report on Trade of East Africa, 172; Motor Car Exhibition, Cairo, 300; Indian Import Trade Statistics, 369; Report on Economic and Financial Conditions in Germany, 469; Report on Economic and Financial Situation in Egypt, 699
Over-Speed Testing Chamber, Turbine and Generator Rotors, 824*
Over-Straining of Steel by Bending, 743*
Owens, Dr. J. S., on Smoke and Public Health, 746
Oxford Meeting, British Association. See *British Association*
— University, Fatigue Tests, Steel, in Chemical Solutions, 807*
— — Institute of Agricultural Engineering, Report on Artificial Drying of Crops, 591
Oxy-Acetylene Welding. See *Welding*
Oxygen, Dissolved, in Feed Water, Recorder for, 610*
— Free Iron, Preparation of, 68
Ozalid Photo-Printing Process, 516

P.

PAINT Materials, Standard Specifications, 45, 214, 579
Palm-Oil Industry, West Africa, Position of, 330
Palmer, F., on Indian Engineering, 566, 613. See 573, 600
Palmer's Oil Separator, 29*. See 7
Palmers' Shipbuilding and Iron Co., Ltd., Trials of S.S. "Sucre," 169*; Trials of S.S. "British Inventor," 233; Launch of M.S. "Patella," 510; Trials of S.S. "Stuartstar," 517; Trials of S.S. "Afriestar," 766
Palmgren, A., on Design of Ball Bearings, 127*
Pans, Steam-Jacketed, Explosions, 414, 456, 617
Panama Canal, Tonnage Measurement in (Review), 38
Panthette Motor Cycle, 453*
Paper Boards, Drying Machines for, 659*
— Insulation, Cables, Tests at National Physical Laboratory, 126
— Making, Uses of Compressed Air, 550
— Mills, Calidercruix, Boiler Explosion, 414
Paraffin Engines. See *Engines, Oil*
— Tractors. See *Tractors*
Paramount Motor Cycles, 454*
Paris Substations, Synchronous Motor-Generator Sets, 569*
Parison Moulds, Glass Bottle Making Machines, 823
Parker, R. G., on a Recording Torsion Dynamometer, 764*
Parmiter, Hope & Sugden, Ltd., Aeroflex Fuses, 693*
Parrish, F., on the Corrosion and Erosion of Centrifugal Baskets, 113; on Lead for Chemical Plant, 113
Parry, E., on Use of Reynold's Number in Hydraulics, 474*
Parsons, Sir C. A., Award of Kelvin Medal to, 478, 543
Parsons, C. A., & Co., Ltd., 10,000-kw. Turbo-Alternator, Derby Power Station, 545*; Exhibits at Cardiff Exhibition, 717*
Parsons Marine Steam Turbine Co., Ltd., High-Pressure Geared Turbines, S.S. "King George V," 321*
— Turbines. See *Turbines, Steam*; *Marine Propulsion*
Partitions, Sound Transmission and Reflection by, 114; Sound-Proof Forms, 668*
Passenger Steamers. See *Steamers*
"Patella," Motor Tank Ship, Launch, 510
Patents in Irish Free State, Validity of, 111
— Record, 30*, 92*, 152*, 186*, 250*, 296*, 404*, 524*, 588*, 618*, 680*, 710*, 742*, 833*. See PATENT RECORD INDEX
— Specifications, Classification of, 224
Patentees, Institute of, Exhibition of Inventions, 516
Paterson Filters, Metropolitan Water Board, Walton, 9*
Peat, Canadian, Manufacture and Uses, 500
— Commercial Utilisation, Work of United States Bureau of Mines, 501
Pelton Wheels, Bâle Exhibition, 174
— — German Construction, 709
Pendulum Apparatus for Gravity Determination, 271*
Penny, F. H., on Machine Drives, 513
Pension and Benevolent Society, Metal Trades, 575
Perforated Plates, Prevention of Flame Propagation by, 166
Perkin, Dr. F. M., on Fuels from Carbonisation Processes, 640
Perkin & Co., Ltd., Vice, 802
Permanent Way, Track Stresses, Indian Railways, 252
Permeability of Concrete, Research on, 617
Petrie, T., on Deductions from Nozzle Research, 495*
Petrol Carburettors. See *Carburettors*
— Evaporation Losses, Prevention by Breathing Bags, 5
— — Losses in Storage and Transport, 5, 120
— Measuring Pumps, Legislation on, 18
— Measuring Pump, Macleod Roadside, 552*
— Motors. See *Aeronautics*; *Engines, Petrol*; *Motor Cars*; *Motor Boats*; *Tractors*
Petrol Tractors. See *Tractors*
Petroleum, Crude, Recovery from Sand, 409
— Development and Technology in 1925 (Review), 527
— Evaporation Losses in Storage and Transport, 120. See 5
— Fields, Texas, Hydrogen-Sulphide Poisoning, 610
— Origin of, Berginisation of Fish-Liver Oils, 764
— Pipe Lines, Corrosion of, and Protective Coverings, 120
— in Northern Alberta, Report, 396
— Surface Indications of, 483
— Technologists, Institution of, Significance of Surface Oil Indications, by A. B. Thompson, 483; Research Fund, 555; Oils and Other Fuels from Carbonisation Processes, by Dr. F. M. Perkin, 640; Berginisation of Fish-Liver Oils and Other Bodies, by Dr. W. R. Ormandy, Prof. I. M. Heilbron, E. C. Craven and H. J. Channon, 764
— Transportation in United States, 120
— Wells, Increasing Yield by Compressed Air, 550, 825
— See also *Oil*; *Engines, Oil*
Petters, Ltd., Exhibits at Reading Agricultural Show, 85
Petters (Ipswich), Ltd., Oil Engines, Worksop Power Station, 811
Phelon & Moore, Ltd., Motor Cycle, 453*
Phillips, H. W. L., on Aluminium-Silicon Alloys, 458*, 492*. See 318
Phonometer, Webster's, for Sound Measurement, 606*
Phosphorus, Influence on Wrought Iron, 13
Photo-Elasticity. See *Optical Determination of Stress*
— Electric Effects, Electron Tracks in, 255
— — Photometer, Density Measurements, Photographic Negatives, 403*
— Printing Process, Ozalid, 516
Photographic Negatives, Density Measurements on, Photo-Electric Photometer, 403*
Photography, Aerial Surveying by, Burmese Forests, 360; Development, 595, 777,; Williamson Camera, 595*
— of Bullets in Flight, 490*. See 657*
— of Sound Waves in Air, 638*. See 667*
Photometer, Photo-Electric, Density Measurements on Photographic Negatives, 403*
— Spherical Integrating, National Physical Laboratory, 126
Photometric Integrators, Effect of Absorption in, 662
Photometry, Terminology of, 774*
— Treatise on (Review), 625
— Work of National Physical Laboratory, 126
Photomicrographs. See *Microphotographs*
Phragmen, G., on Iron-Silicon Alloys, 369*

Physical Society:

Latent Heat of Fusion of Metals, by J. H. Awbery and Dr. E. Griffiths, 13
Piezo-Electric Quartz Resonator and its Equivalent Circuit, by D. W. Dye, 13
Current-Voltage Characteristics of Electrostatic Machines, by E. J. Evans, 14
Demonstration of Selenium Cells, by Prof. Thirring, 628
Corrosion Products and Mechanical Properties of Certain Light Aluminium Alloys as affected by Atmospheric Exposure, by Prof. E. Wilson, 629
Rapid Bolometer Made by Sputtering on Thin Films, by H. Dewhurst, 676
Hygrometer Employing Glycerine, by Dr. E. Griffiths and J. H. Awbery, 676
Effect of Working on the Physical Properties of Tungsten, by J. W. Avery and Dr. C. J. Smithells, 676
Electro-Endosmosis and Electrolytic Water Transport, by H. C. Hepburn, 756
Input Impedances, Thermionic Valves, Low Frequencies, by L. Hartshorn, 756.
Award of Duddell Medal to F. Twyman, 832
Physical Chemistry. See *Chemistry*
— Laboratory. See *National Physical*
Physics, Acoustics of Public Buildings, 605*, 638*, 667*
— Air Elutriation, Laws of, 773
— Alpha Particles, Collisions with Light Atoms, 254. See *Erratum*, 304
— Analysis of Line Spectra, 225
— Atmospheric Electricity, Fundamental Problems, 764
— Bolometer, Rapid-Acting, Metal Sputtered on Thin Films, 676
— Conductivity, Thermal and Electrical, Iron and Steel, 302, 306*
— Critical Temperature of Water, Determination, 649*
— Crystal Analysis by Röntgen Rays, Quantitative Methods, 255
— Department, National Physical Laboratory, Work of, 69*, 113*
— Electron Collisions, Mechanics of, 225, 255
— — Tracks in Photo-Electric and Compton Effects, 255
— Ether-Drift Experiments at Mount Wilson, 67, 257
— Forces between Ions in a Crystal, 256
— Gyro-Magnetic Electrons, Atomic Structure and Radiation, 225
— Heat Radiation Measurements, Rapid-Acting Bolometer, 676
— Hygrometry, Use of Glycerine in, 676
— Institute of, Physics in Navigation, by F. E. Smith, 791
— Karpen Concentration Cells and Second Law of Thermodynamics, 141
— Kinetic Theory of Gases and Molecular Aggregation, 701
— Light Emission from Atoms, 255
— — Transmission and Reflection by Pile of Plates, 90
— Limiting Friction, Solid Surfaces, Effect of Gases, Vapours and Liquids, 619*, 654*
— in Navigation, 791

Physics, Nobel Prize for, Award, 787
— Optical Flats, Use of Fused Quartz, 764
— Pendulum Apparatus for Gravity Determination, 271*
— Sound Transmission and Absorption by Partitions, 236
— Specific Heat of Hydrogen, 650*
— Spectrum, Asymmetry of Stark-Effect Lines, 255
— — of the Aurora, 20
— Sputtering of Metals on Thin Collodion Films, 676
— Thin Films, Collodion, Production of, 676
— Transmutation of Elements by Low-Voltage Currents, 255
— See also *Physical Society* and PARAGRAPH INDEX
Pickles, J., & Sons (Engineers), Ltd., Band Saw for Re-sawing, 371*
Pier, Bridge, Ferro-Concrete, Pipe Line, Bay Crossing, San Francisco Water Supply, 685*
— Coal-Handling Plant, Beckton Gas Works, 589*
— Thrust, Concrete, Pipe Line, Bay Crossing, San Francisco Water Supply, 683*
Pietzker's Investigations on "Wolf" Experiments, 191*, 251*
Piezo-Electric Quartz Resonator, Equivalent Circuit, 13
Pig Iron, Low-Phosphorus, Production in Birmingham, U.S., 631
— — Prices. See *Metal-Price Diagrams*
Pile Driving, Steam Hammer for Submerged Working, 189*
— Foundations, Bearing Power of Piles, 189
Piling, Timber, Preservation in Sea Water, Report on, 300
— Work, Foundations of Western Electric Co.'s Telephone Works, 187*, 253*
Pines, Financial Return from, 347
Pinions. See *Gears; Gearing; Marine Propulsion*
Pinkerton, A., on Season Cracking of Copper Tubes, 365*. See 320
Pipe, Annular, Frictional Resistance of, 111. See LETTERS 168 (*Erratum* 292), 303, 352
— Bends, Elastic Deformation of, 821
— Corrugated, Resistance to Water Flow, 115
— Culverts, Measurements of Discharge, 653
— Feed-Water, Explosion, Audenshaw, 456
— Flanges for Land Use, Standard Specification, 741
— Flow of Water in, Use of Reynold's Number, 474*
— Gas, Cast Iron Flanges, Standard Table, 667
— Joint, Flexible, (Carlton Pipe Joint Co., Ltd.) 692*
— Lines, Natural Gas, Temperature Fluctuations, 648
— — Oil, Corrosion of, and Protective Coverings, 120
— — Steel, Moccasin Power Station, California, 498*
— — Submerged and Bridge-Supported, Bay Crossing, San Francisco Water Supply, 683*
— — Tansa Completion Works, Bombay Water Supply, 314*
— Steam. See *Steam Pipes*
— Water, Eternit, Tests of, Italian State Railways, 702. See 270
— — Installation and Maintenance, Italian Treatise (Review), 270. See 702
— Wrench, Chain, Vulcan, 68
— See also *Tubes*
Pippard, Dr. A. J. S., on Temperature Stresses in Brake Wheels, 93
Pirbright Oil Separator, 29*. See 7
Pistons, Internal-Combustion Engines, Design of, 142*
— — Combustion Engine, Use of Magnesium, 142*
— Plenty-Still Oil Engine, 585*. See 537*
— Ring, Clupet, 587
— Valves, Three-Cylinder Locomotive, Union Pacific Railroad, 414*
Pit-Head Frame, Ferro-Concrete, Maurits Colliery, Holland, 258*
— Props, Hughes' Hoist for, 692*
— Trams, Griffiths' Door for, 693
— — Pressed Steel, (Butterley Co., Ltd.), 692*
Pitkin, W. R., on Deformation of Tungsten Crystals, 320
Pitot Tube, Air-Velocity Measurement in Mines, 59*. See 122*
— — National Physical Laboratory Investigations, 34
Pitwines Gas Works, Coal-Handling Plant, 779*
Plachy, F., Investigations of British Industrial Conditions, 512
Planing Machine. See *Machine Tools*
Planning Department in Relation to Foremen, 471
Plansifters for Flour Milling, 56*
Plant, Chemical, British, Exhibition of, 144. See 80, 112, 129
Plate-Rolling Mills, Recent Developments, 630
— Ship, Corrosion of, 796*
— Steel, Prices. See *Metal-Price Diagrams*
— — Stresses near Holes, 240
Platinum-Resistance Pyrometers. See *Pyrometers*
Plenty-Still Oil Engine for Fishing Vessels, 537*, 585*
"Plodder," S.S. Boiler Explosion, 372
Plough, Motor. See *Tractor*
Ploughing, Use of Electricity for, 206, 211*. See 423
Plugs and Sockets, Electric, Adjustable, 516
"Plume," Oil Tank Steamer, Launch, 23; Trials, 326
Plunger, Pump, Adjustable Diameter, 41*
Pneumatic Grain Elevating Plant, 26
— Pressure Water-Supply System, Princes Risborough, 454*
— Tools. See *Machine Tools*
— See also *Compressed Air; Air Compressor*
Pocket Book of Air Fleets (Review), 240
Poisoning, Hydrogen-Sulphide, Texas Oilfields, 610
Poland, British Trade with, 475
Poland. Water Power Development and Inland Navigation, 362
Polar-Inductor Magneto (British Thomson-Houston Co., Ltd.), 444*
Polarised Light. See *Light* and *Optical Determination of Stress*
Poles, Ferro-Concrete, Stobie System, 416*
Pollock, J., Sons & Co., Ltd., Trials of Motor Tug "Jolly Tar," 218
Pollution, River, Report of Committee on, 333
— Stream, by Mine Drainage, 419
Polytechnic. See *Education*
Pontoons, Steel, Floating Landing Stage, Seacombe Ferry, 557*
Poole Gas Works, Coal-Handling Plant, 779*
Popoff, N., on the Geometry of the Helical Water Turbine, 155*. See *Errata*, 232
Port of Antwerp, Docks and Extensions, 7, 24*, 51
— Denison, Electric Coaling Transporter at, 5*
— Indian, Development of, 566. See 573
— of London Authority, Ferry Boat with Gill Hydraulic Propeller, 167*
— Talbot, Coal-Loading Plant 162*
Portland Cement. See *Cement*
— Stone, Microscopical Investigations, 223, 401*
Portslade Gas Works, Reconstruction, 392
Post Office Wireless Beam Stations, Bodmin and Bridgwater, 528*. See 515, 543, 587
— — Wireless Station, Rugby, 147*, 181*, 279*
Potato Digging Machines (J. & F. Howard, Ltd.), 85*; (Boeke & Huidekoper), 86*; Hoover Power-Driven, 766*
Potentials, Electrochemical, Carbon and Chromium Steels, 430*
Powders, Air Elutriation, Laws of, 773
— Fine, Chemistry of, 289
Powdered Coal. See *Pulverised Coal*
Power, Alcohol. See *Alcohol; Motor Fuels*
— Conference. See *World Power Conference*
— Electric, Domestic and Industrial Consumption, 541. See LETTER, 599
— — Economics of Distribution, 206, 215*
— — Exchange between Countries, 377
— — Power-Factor Correction, Effect of Voltage Harmonics, 216*, 223
— — Production from House Refuse, 79. See 50, 80
— — Report on Domestic Supplies, 511
— — Supply and Distribution, Development of, 194, 206
— — Tests of Wind-Driven Generators, 150
— — Use in Agriculture, 206, 211*, 423
— — Water Power and Thermal Generation, 378
— Factor Correction by Condensers, Effect of Voltage Harmonics, 216*, 223
— and Fuel Committee, National, Formation, 271
— Gas. See *Gas; Engines, Gas; Producers*
— Hammer. See *Hammer* under *Machine Tools*
— Plant Co., Ltd., Hobbing and End-Milling Gear-Cutting Machine, 193*
— — Electric, Combined Steam and Hydraulic, in California, 80
— — Hydro-Electro, Dolgarrog, Failure of Dam, 484. See 793
— — Hydro-Electric, Exchange of Electrical Energy between Countries, 377
— — Hydro-Electric, Lilla Edet, Sweden, Design of Turbines, 155*. See *Errata*, 232
— — Hydro Electric, Moccasin Creek, California, 499*. See 410*
— — Hydro-Electric and Steam, Co-Operation, 378
— — Hydro-Electric, Isle Maligne, Quebec, Construction of, 747*
— — Lubrication (Review), 239. See *Erratum*, 354
— — See also *Power Stations; Power, Water; Substations*
— Production, Alcohol for. See *Alcohol; Motor Fuels*
— — and Use in Collieries (Review), 811
— — Value of Increased Steam Pressure, 636, 643*
— for Ship Propulsion. See *Marine Propulsion; Ship Resistance*
— Station, Electric, Barking, Explosion of Valve Chest, 617
— — Electric, Barton, 41,000-kw. Turbo-Generator for, 513
— — Electric, Derby, Extensions to, 545*
— — Electric, Diesel Engine, Working Costs, 822
— — Electric, Electricity Commissioners' Statistics, 604
— — Electric, Improving Efficiency, 61, 197
— — Electric, Interconnection, Provisions of Electricity Bill, 636
— — Electric, Multi-Stage Bleeding for Feed Heating, 61
— — Electric, Neuhof Diesel Engine and Generator, 117*; Trials, 555*
— — Electric, Rugby Wireless Station, 147*
— — Electric, Shrewsbury, Diesel Engine, 626*
— — Electric, St. Pancras, Pulverised-Fuel Installation, 567*
— — Electric, Thorpe, Norwich, 576*
— — Electric, Valley Road, Bradford, 20,000-kw. Turbo-Generator for, 465*
— — Electric, Widnes, United Alkali Co., Ltd., 15
— — Electric, Worksop, Oil-Engine Driven Generators, 811
— — Hydro-Electric, Augst, 334
— — Hydro-Electric, Bâle Exhibition, 173
— — Hydro-Electric, German Turbine Construction, 708*
— — Hydro-Electric, in Italy, 567
— — Hydro-Electric, in New Zealand, 793*
— — Hydro Electric, Turbines and Electrical Equipment, 334, 364
— — Steam and Hydro-Electric, Co-Operation, 378
— — Supply of Heating Steam from, 603
— — Value of Increased Steam Pressure, 636, 643*
— — See also *Power Plant; Substations*
— Supply, Electric, Development, 194, 206, 667
Power, Supply, Electric, Electricity Commissioners' Statistics, 604
— — Electric, Provisions of Electricity Bill, 636
— — Electric, Report of Electricity Commissioners, 789
— Tidal, Possible Sites, 579, 599, 641, 672
— Transmission, Electric, Use of Variable-Frequency Currents, 33*. See 99*, 159*
— — Electric, Voltage Control on Distributors, 54
— — and Distribution, Electric, Principles of (Review), 98
— — Fencing of Shafting and Pulleys, 359
— — Group Driving and Individual Motor Drives, 513
— — Lines, Overhead, Moccasin Power Plant, California, 499*
— — Lines, Stobie Ferro-Concrete Poles, 416*
— — Recording Torsion Dynamometer, 764*
— — Uses of Compressed Air, 549
— — Wearn's Automatic Belt-Tensioning Drive, 733*
— — See also *Gearing; Marine Propulsion.*
— Water, British Resources, 196. See 206
— — Co-Operation with Thermal Power Plants, 378
— — Dolgarrog Dam Disaster, Report, 484*. See 793
— — Development, and Inland Navigation, 361
— — Exchange of Electrical Energy between Countries, 377
— — German Turbine Construction, 708*
— — and Inland Navigation Exhibition, Bâle, 173
— — Isle Maligne Power Plant, Quebec, 747*
— — New Zealand Developments, 793*
— — Resources of Various Countries, 363, 567
— — River Rhone Developments, 173
— — Turbine Testing Station, Verkstaden Kristinehamn, Sweden, 374*, 405*, 439*
— — Utilisation of, World Power Conference, 333, 361. See 173
— — See also *Hydraulic; Power Plants, Hydro-Electric; Pelton Wheels; Turbines, Hydraulic*
Pratt & Whitney Co., Grinding Machine, 305*
Presidential Address to British Association, by H.R.H. the Prince of Wales, on the Value of Science, 171. See 175
— — to British Association (Chemistry Section), by Dr. J. F. Thorpe, on the Scope of Organic Chemistry, 257
— — to British Association (Engineering Section), by Sir J. F. C. Snell, on the Development of Electric Supply, 194. See 206
— — to British Association (Forestry Section), by Lord Clinton, on Small Holdings and Afforestation, 290
— — to British Association (Mathematics and Physical Science Section) by Prof. A. Fowler, on Line Spectra, 225
— — to Institution of Automobile Engineers, by H. K. Thomas, on the Debt of the Community to the Automobile, 451
— — to Institution of Chemical Engineers, by Sir F. Nathan, on Elimination of Industrial Waste, 112
— — to Institution of Civil Engineers, by F. Palmer, on Indian Engineering, 566, 613. See 573, 600
— — to Institution of Electrical Engineers, by Dr. W. H. Eccles on the Electrical Industry, 54. See LETTER 599
— — to Institution of Engineers, Australia, by G. A. Julius, on Australian Manufacturing Policy, 160*
— — to Institution of Fuel Technology, by Sir A. Mond, on Fuel Economy, 729
— — to Institution of Gas Engineers, by C. F. Botley, on the Gas Industry, 391
— — to Institution of Mechanical Engineers, by W. Reavell, on Production and Uses of Compressed Air, 549. See 531
— — to Junior Institution of Engineers, by Engineer Vice-Admiral Sir R. B. Dixon, on Progress in Marine Machinery, 736, 754
— — to Society of Glass Technology, by W. Butterworth, on Work of the Society, 704
— — to Trades Union Congress, by A. Pugh, on Co-Operation in Industry, 329
Press, S. A., on Variable-Frequency Currents, 31*, 99*, 159*
— See *Machine Tools*
Pressed-Steel Pit Trams (Butterley Co., Ltd.), 692*
Preston, Railway Wagon Weighing Tippler, 69*
Prices of Metals. See *Metal-Price Diagrams*
Priest Regulating Reservoir, Hetch-Hetchy Water Supply, San Francisco, 410*
Prince of Wales, H.R.H., on the Value of Science, 171. See 175
Princes Risborough Auto-Pneumatic Water-Supply System, 454*
Printing Trade, Uses of Compressed Air, 551
Producer, Gas, and Lime Kiln Combined, Reid System, 447*
— — Engine. See *Engines, Gas*
Production Costs and Wages, 112
— Engineers, Institution of, Annual Dinner, 633
Professional Civil Servants, Institution of. See *Civil Servants*
Profit Sharing. See *Labour*
Projectiles, Armour-Piercing (Hadfields, Ltd.), 722*. See 728
— Rifle Bullets, Photographing in Flight, 490*. See 657*
Propeller, Aerial. See *Aeronautics*
— Hydraulic, Gill, for Ferry-Boat, 167*
— Type Hydraulic Turbines, Bâle Exhibition, 174; German Construction, 708*
Props, Pit, Hughes' Hoist for, 692*
Propulsion of Ships. See *Marine Propulsion; Engines; Turbines; Propeller; Ship Resistance*
Propulsive Efficiency, Motor Ships, 763
Proverbs, W. G., Ltd., Explosion of Wax-Melting Pan, 414
Public Buildings, Acoustics of, 605*, 638*, 667*
— Health and Atmospheric Pollution, 746
— — and the Engineer, 48
Public Safety Congress, National Safety First Association, 574; Road Construction and Safety, by H. E. Aldington 697
— Works Department, Shanghai, Report, 121
Pugh, A., on Co-Operation in Industry, 329
Pulleys and Shafting, Fencing of, 359
"Pulpit Point," Oil Tanker, Launch, 297 Trials, 510
Pulverised Coal Plants, Explosions in, 237
— Fuel for Boiler Firing, Advantages, 61
— — Burning, Buell System, 813*
— — Firing, Gasified-Fuel System, 294*
— — Firing, Volume of Combustion Space, 267
— — Lopulco System, Billingham Synthetic Ammonia Works, 381*. See LETTER, 443; Derby Power Station, 545*; St. Pancras Power Station, 567*
— — Steam-Heated Dryers, Lopulco System, 381*
— — Turbulent Combustion of, 267
— Smokeless Fuel, Boiler Firing, 720*
Pulverisers, Coal, Forplex, 295*; Raymond, 381*, 546*; Bettington and Holbeck (Fraser & Chalmers Engineering Works), 715*; (Clarke, Chapman & Co., Ltd.), 720*; Kek Mill, 815*
Pumps, Centrifugal, for Boiler Feeding, 793
— — Geared-Turbine Drive, Walton Pumping Station, 42*
— — Oil-Engine Driven, Burnt Fen Drainage Scheme, 612*
— — and Petrol Engine, Portable (J. W. Brooke & Co., Ltd.), 427
— — Pressure Boosting, Manchester Hydraulic Power Supply, 793
— — Recent Applications, 793
— Fuel, Belliss & Morcom Diesel Engine, 628*
— — Diesel Engine for Excavator, 325*
— — Plenty-Still Oil Engine, 585*. See 537*
— Helivane, for Low Heads, 88*
— Measuring, Petrol, Legislation on, 18
— — Roadside, for Petrol, Macleod, 552*
— Plunger, Adjustable Diameter, 41*
— — Steam-Driven, Walton Pumping Station, 41*
— Ram (National Gas Engine Co., Ltd.), 53*
— Screw, Viscosity, Theory of, 825
— Vacuum, for Surgical Work, 531
Pumping, Air-Lift, Applications, 549, 550
— Plant, Auto-Pneumatic System, Princes Risborough Water Supply, 454*
— — Oil-Engine Driven, Fen Drainage, Burnt Fen District, 612*
— Station, Walton-on-Thames, Metropolitan Water Board, 40*. See 9*, 111
Punjab, Irrigated Forest Plantations, 348
Purification of Sewage. See *Sewage*
— of Water. See *Water*
Purifiers for Flour Milling, 57*
Pye, D. R. on the High-Duty Compression-Ignition Engine, 277* See 207
Pyrites, Effect on Spontaneous Combustion of Coal, 487, 679
Pyrometer, Platinum-Resistance, Callendar's, Steam Temperature Measurements, 649*
— for Surface Temperature Measurements, Cambridge, 507*

Q.

QUARTZ, Fused, Use for Optical Flats, 764
— Insulators, Prevention of Deterioration, 115
— Resonator, Piezo-Electric, Equivalent Circuit, 13
Quayle, P. P., Photography of Bullets in Flight, 490*
Quebec, Isle Maligne Power Plant, Construction, 747*
Queensland, Bowen Coaling Transporter at, 5*
Quenching of Steel. See *Heat Treatment* under *Metallurgy*
Quicksilver. See *Mercury* and *Metal-Price Diagrams*

R.

RADIAL Drill. See *Drill* under *Machine Tools*
Radiation, Heat, Measurement, Rapid-Acting Bolometer, 676
— Theory of, and Gyro-Magnetic Electrons, 225
Radiology, Work of National Physical Laboratory, 114*
Radiotelegraphy. See *Telegraphy, Wireless*
Radiotelephony. See *Telephony, Wireless*
Radium Tests at National Physical Laboratory, 114
Railless Electric Omnibuses, Bradford Corporation, 292
Railroad, Union Pacific, 4-12-2 Type Three-Cylinder Locomotive, 291*, 413*, 519*, 598*
— See also *Railways*
Rails, Steel, Indian Railways, Report on Stresses in, 252
— — Prices. See *Metal-Price Diagrams*
Railway Accidents. See *Accidents*
— Bridge. See *Bridge*
— British, Accident Statistics, 421
— — Safety of, American Comments, 421
— Carriage. See *Carriage*
— Electrification, Sydney Suburban System, 432*
— — World Power Conference, 424
— German State, Locomotive with Three Pressure Boilers, 198*. See *Erratum*, 231
— Great Western, Coal-Loading Plant, Port Talbot, 162*
— Indian, Construction, 566. See 573, 600
— — Majex Coupler Transition Device, 631*
— — Report on Track Stresses, 252
— — Workshop Management, Report, 635
— Italian State, Tests of Eternit Water Pipes, 702. See 270
— Loading Gauge, Influence on Locomotive Design, 482
— Locomotive. See *Locomotive*

Railway, London, Midland & Scottish, 40-ton Well-Wagon, 263*; Dredger "Carronwater," 357
— — and North Eastern, Accelerometer Experiments, 396*; Accident at Bishop's Stortford, 268; Dredger "Tolford" for Hull Docks, 364; Electric Train Collision, Manors Junction, Newcastle, 544; 8.8. "Sheringham," 578
— Rolling Stock, Majex Coupler Transition Device, 631*
— — Stock. See also *Carriages; Locomotives; Wagons*
— Sierra Leone, Report, 657
— Signalling. See *Signalling*
— Sleeping Car, International Sleeping Car Co., Ltd., 751*, 785*
— Southern, Southampton Docks Extension, 384*; Lord Nelson Class Locomotive, 473*; Remodelling of Charing Cross and Cannon Street Stations, 721
— Street. See *Tramways*
— Suburban, Electrification, Advantages and Costs, 452
— Train Brake. See *Brake*
— — Express, Track and Air Resistance (Review), 777
— Tube. See *Underground*
— Tunnel, Swiss, Fatal Accident from Locomotive Fumes, 556
— Underground. See *Underground*
— United States, Diesel-Electric Locomotive for, 150*
— Wagons. See *Wagons*
— Work, Uses of Compressed Air, 550
— See also *Railroads* and PARAGRAPH INDEX
Rainfall in Florida Hurricane, 711
— Georgetown, British Guiana, 682
"Rajula," S.S., Trials, 816
Ram Pump (National Gas Engine Co., Ltd.), 53*
Ramage & Ferguson, Ltd., Trials of M.Y. "Eros," 175
Rand Water Supply, Report on, 74
Ransome, A., & Co., Ltd., Band Saw with Bevel Roller Feed, 640*
Ransome Machinery Co. (1920), Ltd., Asphalt and Tar Macadam Plant, 131*
Rating of Steam Boilers, United States, 268
Raven, Sir V., Report on Indian Railway Workshop Management, 635
Rawdon, H. S., on Phosphorus in Wrought Iron, 13
Raymond Pulveriser, Coal Grinding, 381*, 546*
Reactions, Chemical. See *Chemistry*
Reactivity of Coke, 409
Reading Agricultural Show, 52*, 81*
— Ferro-Concrete Bridge Caversham, 343*
Reaping and Binding Machine (Ruston & Hornsby, Ltd.), 732*
Reavell, W., on Production and Uses of Compressed Air, 549. See 531
Recalescence Curves. See *Metallurgy*
Recorder, Dissolved Oxygen in Feed Water, 610*
— Switch Operation, for Substations, 718*
Recording Accelerometer, Two-Component, Cambridge, 396*
— Torsion Dynamometer, Parker & Jackman's, 764*
— Venturi Meters, Resistance of Filter Beds, 123*
Red Mountain Bar, Inverted Syphon, San Francisco Water Supply, 621*
Rederi Akt. Nidaros, S.S. "Nidaros," 674
Redler Chain Conveyor for Flour Mills, 91*
Redmayne, Sir R., on German Brown Coal, 744
Reduction Gears. See *Gears; Marine Propulsion; Motor-Car Details*
Rees, W. J., on the Influence of Iron Oxide on Silica, 385
Refining Metals Electrically (Review), 700
Reflection of Light by Pile of Plates, 90
Reflectors, Enamelled-Steel, Electric Lamps, Tests, 775*
Refractory Linings for Cement Kilns, 386
— Materials, Drying and Burning, 385
— — Corrosion and Erosion Phenomena, 823
— — in Gas Industry, 352, 408
— — Mullite and Sillimanite, X-Ray Patterns, 823
— — Silica, Influence of Foreign Matter, 386
— — Silica, Influence of Iron Oxide, 385
— — Sillimanite, Use in Glass Works, 823
Refrigerated Transport of Apples, 205. See LETTER, 303
Refrigerating Machinery, Design and Operation, 773
— Plant, Brewers' Exhibition, 579
— — Small, at British Association Meeting, 205
Refrigeration in Chemical Industry, 773
Refrigerator, Absorption Type, Electrolux, 75*
— CO_2 Type, Cooling of Working Fluid, 206
Refuse, House, Disposal of, 50, 79, 80. See LETTER, 115
— Trade, and River Pollution, 333
— Destructors. See *Destructors*
Regenerative Braking, Advantages of, 437*
— Furnace. See *Furnace*
Regulations, Electrical Equipment of Buildings, 516
— Ferro-Concrete Construction, London, 752
Regulating Reservoir, Hetch-Hetchy Water Supply, San Francisco, 410*
— Sluices, Automatic Sector, Diversion Dam, San Francisco Water Supply, 220*, 283*
Regulator, Arc Welding, 176*
Reid Combined Lime Kiln and Gas Producer, 447*
Reinforced Concrete. See *Ferro-Concrete*
Relay, Accelerating, Brookhirst Motor Starter, 181*
Relieving Lathe. See *Lathe* under *Machine Tools*
Remuneration of Labour. See *Labour*
Repairing Yards, Ship, Antwerp, 51
Repairs, Road, and London Traffic, 390
Repeated Stresses. See *Alternating Stress* under *Tests* (*Materials*).
Report, Administration of Road Fund, 575
— Aeronautical Research Committee. See under *Aeronautics*
— Age Hardening of Y Alloy, 605. See LETTER, 731
Report, Air Waves Round Bullets in Flight, 657*
— Alkali Works, 414
— Artificial Drying of Crops, 591
— Board of Trade, Boiler Explosions. See *Boiler Explosions*
— Building Research Department, Cement Consistency Tests, 821
— Canadian Peat, 590
— Committee on River Pollution, 333
— Dolgarrog Dam Disaster, 484*. See 793
— Deterioration of Structures in Sea Water, 300
— Domestic Electric Supplies, 511
— Economic and Financial Situation, Egypt, 699
— — and Financial Conditions, Germany, 469
— Electrical Machinery in Mines, 791
— Electricity Commissioners, 789
— Engineering Industry, 607*
— Heat Treatment of Gas Cylinders, 184
— Indian Railway Workshop Management, 635
— Industrial and Economic Situation in Chile, 110
— — Fatigue Research Board, 481
— Irrigation of Kalahari Desert, 269
— London Traffic, 389; Cross River Traffic, 754*, 760. See LETTER, 825
— Machinery Failures, 203
— Marine Oil Engine Trials, Committee, 761*, 767*, 781, 799
— Natural Gas and Petroleum in Northern Alberta, 396
— Riveted and Welded Joints in Boilers, 489
— Royal Commission on Cross River Traffic, London, 754*, 760. See LETTER, 825
— Safety in Mines Research Board. See *Research Board*
— Safety Regulations in Factories, 359. See 433
— Seismological Investigations, 256
— Swiss Association of Steam Boiler Users, 62
— Track Stresses, Indian Railways, 252
— Trade of East Africa, 172
— — Industries and Resources of Newfoundland, 48
— Work of National Physical Laboratory, 3, 34*, 68*, 113*, 126*
— Working Costs of Heavy Oil Engines, 822
— See also *Board of Trade*
Research Association, British Electrical and Allied Industries, Properties of Steam at High Pressures, 649*, 681*, 712*
— — Woollen and Worsted Industries, Hygroscopic Properties of Wool Fibres, 256
— Board, Engineering, Fatigue Tests, Steel, in Chemical Solutions, 807*
— — Fuel, Tests of Fusion Rotary Retort, 699
— — Industrial Fatigue, Work of, 481; Reports on Heating and Ventilating of Factories, 102
— — Safety in Mines, Investigations of Detonation Velocities, 152*; Report on Flame-Proof Electrical Appliances, 166; General Report, 611; Spontaneous Combustion of Coal, 679. See 487; Report on Trapping Dust Produced by Rock Drills, 822
— Committee, Aeronautical, Report. See under *Aeronautics*
— — Explosives in Mines, Ignition of Firedamp by Explosives, 227
— Department, Air Ministry, Development of Rotating-Wing Aircraft, 207, 246*
— — Development of Compression-Ignition Engine, 207, 277*
— — Building, Investigations of Permeability of Concrete, 617; Determination of Lime in Hydraulic Cement, 705*; Report on Cement Consistency Tests, 821
— — Scientific and Industrial, Reports on Illumination Research, 774*
— — Woolwich, Investigations of Macrostructure of Cast Metals, 88*; Report on Air Waves Round Rifle Bullets in Flight, 657*; Experiments on Gas Absorption in Steel, 678
— Deterioration of Structures in Sea Water, 300
— Fund, Institution of Petroleum Technologists, 555
— Industrial, Need for Accuracy in, 109
— — Value of, 112, 171. See 175
— Laboratories, University of Sheffield, 50
— Station, Fuel, Greenwich, Carbonisation of Holmside Coal in Vertical Retorts, 1*. See LETTERS 72, 133; Experiments on High and Low Temperature Carbonisation, 166. See 131
— Supply of Workers for, 666
— Work in British Empire, Co-Ordination, 665
— — Institution of Mechanical Engineers, 759. See 792, 825
— — Turbine Nozzles, Deductions from, 495*
— See also *National Physical Laboratory*.
Reservoir, Belmont, Bolton Water Supply, Repair Work, 793
— Hetch-Hetchy. See *Hetch-Hetchy Water Supply, San Francisco*
— Inspection of, Proposed Legislation, 793
— Regulating, Hetch-Hetchy Water Supply, San Francisco, 410*
Resistance, Electric. See *Electric*
— of Express Trains (Review), 777
— Frictional, of Annular Waterways, 111. See LETTERS 168 (*Erratum* 292), 303, 352
— Pyrometer. See *Pyrometer*
— of Ships. See *Ship Resistance*
— to Water Flow in Corrugated Pipes, 115
— Welding. See *Welding*
Resonator, Quartz, Piezo-Electric, Equivalent Circuit, 13
Respirators, Dust, Investigations, 106
Retaining Wall, Ferro-Concrete Arch, Ahmedabad, 464*
Retorts, Gas, Refractory Materials for, 352, 408
— — Hand Charging and Discharging Gear (H. Morris, Ltd.), 354*
— Rotary, Fusion, Low-Temperature Carbonisation, Tests, 699
— Vertical, Carbonisation of Holmside Coal in, 1*. See LETTER 72, 133
— — Gas Manufacture, Birmingham Gas Department, 407
Retorts, Zinc, Bibliography of, 464
Reviews. See LITERATURE INDEX.
Reynold's Number, Use in Hydraulics, 474*
Rhead, T. F. E., on Carbonisation in Vertical Retorts, 407
Rhine, River, Augst Power Station, 334
— — Navigation Improvements, 173, 174. See 334
Rhone, River, Water Power Developments, 173
Richards & Co., Herring Drifter "Veracity," with Diesel Engine, 334
Richardson, Com. H. C., on Floats for Aircraft, 705*
Rider, D., on Statistical Methods and Industrial Efficiency, 765
Rifle Bullets in Flight, Air Waves round, 657*
— — Photography in Flight, 490*
Rigid Airships. See *Airships* under *Aeronautics*
Riley Motor-Car, Supercharged Engine, 534*
Rims, Rotating Discs, Stresses in, 12
Rings, Case-Hardened, Distortion of, 470*
Ripple-Tank Method, Investigation of Sound Waves, 114, 638*
River Clyde Estuary, Sand Blackening, Investigation by Sulphur Bacteria, 223, 231*
— Craft for Inland Navigation, 363
— Estuaries, Sites for Tidal Power Schemes, 579, 599, 641, 672
— Fal, Dredging, 702
— Hudson, Bear Mountain Bridge, Cable Construction, 803*
— Hydraulic Phenomena of Movable Weirs, 54*, 701
— Mersey, Seacombe Ferry, Floating Landing Stage and Roadway, 557*
— Murrumbidgee, Burrinjuck Dam, Flood Conditions, 168
— Pollution, Report of Committee on, 333
— Rhine, Augst Power Station, 334
— — Navigation Improvements, 173, 174. See 334
— Rhone, Water-Power Developments, 173
— Saguenay, Quebec, Isle Maligne Power Plant, 747*
— Thames, Ferro-Concrete Road Bridge, Caversham, 343*
— — London, Proposed Bridges, 754*, 760. See LETTER 825
— Traun, Austria, Ferro-Concrete Bridge, 622*
— Tuolumne Scheme, San Francisco Water Supply. See *Hetch-Hetchy*
— Water-Power Development and Navigation, 361
— Zambesi, and Irrigation of Kalahari Desert, 269
Riverside Mill Co., Ltd., *v.* Hart, Wages Deductions for Bad Work, 821
Riveted and Welded Joints, Boiler Construction, 489
Rivets, Ship, Corrosion of, 796*
Riviera Express, Sleeping Car for, 751*, 785*
Road Carriage, Cowan's Early Steam, Experience with, 543
— Concrete, Construction and Maintenance, 360, 361
— Congress, International, Milan, 360, 373, 411; Concrete and Bituminous Roads, 360; Machinery for Road Works, 361; Bitumen and Asphalt Roads, 373; Standardisation of Materials, 411; Roads for Motor Traffic, 412; Traffic and Town Planning, 412; Roads Exhibition, 413
— Construction, Asphalt and Tar Macadam Plant, 14-ton Ransome, 131*
— — Bituminous Materials and Asphalt, 373, 411
— — Materials, Standardisation of Tests, 411
— — Methods, Statistics, 605
— — Plant, Exhibition, International Roads Congress, Milan, 413
— Damage by Steel Tyres, Motor Vehicles, 271
— Fund, Administration of, Report, 575
— Repairs and London Traffic Problem, 390
— Special, for Motor Vehicles, 412
— Surfaces, Impact Loads, Motor Wagons, Solid and Pneumatic Tyres, 697
— — for Motor Transport, 697
— Traction, Railless Electric. See *Railless*
— Traffic, Census of, Ministry of Transport, 412, 604
— — Cross River, London, Report, 754*, 760. See LETTER 825
— — Delays, Causes and Prevention, 390, 698
— — London, Report on, 389
— — Statistics of Motor-Cars, 565
— — and Town Planning, Relationship, 412
— Watering, Motor Vehicle for, 523*
Roadside Pump for Petrol, Macleod, 552*
Roadway, Floating, Seacombe Ferry, 557*
Roberts, Engr.-Capt. I., the Late, 660
Roberts, P. E., on Mechanical Parts of Winding Engines, 671
Rock Blasting, Construction of Isle Maligne Power Station, 750
— Drills, Trapping of Dust Produced by, 822
"Rohna," S.S., Launch of, 265; Trials, 769
Rollers for Belt Conveyors, Ball and Roller Bearing, 651*, 717*. See *Erratum*, 724
— Bearings. See *Bearings*
— Feed, Bevel, for Band Saw, 640*
— Mills for Grinding Flour, 55*, 91*
— Steam-Heated, Pyrometers for, 507*
Rolling Friction, Effect of Lubrication, 3
— Mills, Plate, Recent Developments, 630
— Stock, Railway, Majex Coupler Transition Device, 631*
— — See also *Carriages; Locomotives; Wagons*
Röntgen Rays, Crystal Analysis by, Quantitative Methods, 255
— — Investigations, Iron-Silicon Alloys, 369*
— — National Physical Laboratory Investigations, 114*
— — Patterns, Mullite and Sillimanite, 823
— — Tubes, Current-Voltage Characteristics of Electrostatic Machines, 14; of Induction Coil, 114*
Roof, Suspended, Open-Hearth Furnaces, 494
— Wind Pressure on, National Physical Laboratory Investigations, 4
Rooksby, H. P., on Deformation of Tungsten Crystals, 320
Rooms, Acoustic Properties of, 605*, 638*, 667*
Ropes, Wire. See *Wire Ropes*
Ropeway, Aerial. See *Wire Ropeway*
Ropner Shipping Co., Ltd., Trials of S.S. "Firby," 15
Rosenhain, Dr. W., Experiments on Heat Treatment of Nickel Steel, Criticism, 109; On Modern Metallurgy and Ancient Industries, 317
Ross, J. D., on Alcohol Motor Fuels, 130
Rosyth Naval Dockyard, Construction, 596
Rotary Converter Substation, Automatic, Soho Square, London, 485*
— — 4,500-kw., Sydney Suburban Railway Electrification, 433*
— Engine. See *Engine; Aeronautics*
— Kilns, Cement Manufacture, Refractory Linings for, 386
— Pump. See *Pump*
— Retort, Low-Temperature Carbonisation, Tests, 699
Rotating Cylinder, Fluid Flow Round, 34*
— Discs, Stresses in Rims, 12
— Wing Type of Aircraft, 35, 207, 246*
Rotor-Motor Ship "Barbara," Trials, 427
— Steam Turbine, Gyroscopic Vibration, 581*
— Turbo-Generator, Testing Chamber for Over-Speed Tests, 824*
Rotoscope, Ashdown, High-Speed Shutter, 686
Rouse, A. A., on Production of Motor Cars, 206
Rowe, F. W., on Production of Bronze Worm-Gear Blanks, 388*. See 320. See LETTERS, 395, 443
Royal Aeronautical Society. See *Aeronautical*
— Agricultural Hall. See *Exhibition*
— — Society. See *Agricultural*
— Commission, Cross-River Traffic, London, Report, 754*, 760. See LETTER, 825

Royal Institution:

Spectrum of the Aurora, by Prof. J. C. McLennan, 20
Ether-Drift Experiments at Mount Wilson by Prof. D. C. Miller, 67. See 257
Tyndall Lectures, on Acoustics of Public Buildings, by Dr. G. W. C. Kaye, 605*, 638*, 667*
Fundamental Problems of Atmospheric Electricity, by Dr. G. C. Simpson, 764

Royal Mail Steam Packet Co., M.S. "Alcantara," 418
— Metal Trades Pension and Benevolent Society, 575
— Meteorological Society. See *Meteorological*
— Sanitary Institute. See *Sanitary*
— Society of Arts. See *Arts*
— Technical College, Glasgow, Calendar, 296
Rubber Articles, Vulcanisation and Moulding of, 721
— Industry, Exhibit at Exhibition of Inventions, 516
Rubbra, A. A., on Optical Indicators, 727
Rugby Wireless Station, 147*, 181*, 279*
Rule for Internal Measurements, 233
Rules, Electrical Equipment of Buildings, 516
Runaway Catch for Mine Tubs, 232
Rural Districts Water Co., Ltd., Automatic Pumping Plant, Princes Risborough, 454*
Russell, N., Report on House Refuse Disposal, 79. See 50, 80
Russian Navy, Development of Mine-Laying Vessels, 790
Rust Engineering Company, Reinforced Concrete Chimney at Tadanac, B.C., 35*
Rusting. See *Corrosion*
Ruston & Hornsby, Ltd., 5-h.p. Paraffin Engine, 52*; Horse-Drawn Mowing Machine, 52*; Motor-Driven Excavator on Caterpillar Track, 568*. See *Erratum*, 816; Reaping and Binding Machine, 732*
Ruth's Steam Accumulators, Chemical Plant Exhibition, 145; Use in Combination of Steam and Water Power Plants, 379
Rutherford, Sir E., on Collisions between Alpha Particles and Atoms, 254. See *Erratum*, 304
Rutter, C. H., on Portslade Gas Works, 392

S.

SAFETY Acetylene Generator, Welding and Cutting Plants, 691*
— First Association, National, Public Safety Congress, 574
— Lamps, Electric, Cardiff Exhibition, 688
— in Mines Research Board, Report, 611; Spontaneous Combustion of Coal, 679. See 487; Report on Trapping Dust Produced by Rock Drills, 822
— Regulations in Factories, Report on, 359. See 433
Saguenay River, Isle Maligne Power Plant, Quebec, 747*
Saint. See *St.*
Salt Solutions, Effect in Fatigue Tests, 807*
Salvage Crane for Motor Cars, 832*
— Marine, Work of E. T. Ensor, 324. See 296
San Francisco Earthquake, Effect on Ferro-Concrete Structures, 46
— — Hetch-Hetchy Water Supply, 63*, 94*, 219*, 283*, 410*, 497*, 621*, 683*
Sand and Cement Testing Machines, Sheffield University, 50
— Blackening, River Clyde Estuary, Investigation by Sulphur Bacteria, 223, 231*
— Flotation Process of Coal Cleaning, 120
— Recovery of Crude Oil from, 409
— Washing Plant for Filters, Metropolitan Water Board, Walton, 12*
Sandpapering Machine, Three Drum, 230*
Sandstones, Microscopical Investigations, 223, 401*
Sanitary Institute, Royal, Annual Congress, 48, 80. See 79, 115
Sanitation, Delimitation of Drainage Areas, 49
— Disposal of Town Refuse, 50, 79, 80. See LETTER 115
— The Engineer and Prevention of Malaria. (Review), 239

Sanitation, Prevention of Malaria: Bats, Mosquitoes and Dollars (Review), 144
— Work of Engineers, 48
— See also *Sewage Disposal*
Santa Barbara Earthquake, Effect on Buildings, 482
Sargeant, E. F., Sauerman Excavator, 717*
Sauerman Cable-Suspension Bucket Excavator, 717*
Saw Mills for Small Timber Growers, 348
Saws. See *Machine Tools*
Sawdust, Sugar Production from, 130. See 144
Sayers Electric Generator for Aircraft, 434*
Scale, Boiler, Prevention, Filtrator Process, 415*
Scaling Tools for Condenser Tubes, 611*
Schenck, C., Electro-Magnetic Alternating Stress Testing Machine, 722*
Schmidt'sche Heissdampfgesellschaft, Locomotive with Three-pressure Boiler, 198*. See *Erratum*, 231
Schneider & Cie., Synchronous Motor-Generator Sets, Paris Substations 569*
Scholarships. See *Education*
Science and Art in Human Progress, 235
— History of, Link between Science and Humanities, 348
— Museum, South Kensington, Extensions and Developments, 172; Calculating Machines, 657; Engineering Lectures, 731
— Scholarship Examinations, 641
— Value of, 171. See 175
Scientific Instruments, Ancient, Lewis Evans Collection, 223
— Management. See *Works Management*
— Research. See *Research*
— Societies. See *Institutions*
Scotland, Institution of Engineers and Shipbuilders in. See *Engineers*
— Naval Dockyard, Rosyth, Construction, 596
Scotch Pines, Financial Return, 347
Scotts' Shipbuilding & Engineering Co., Ltd., Performance of M.S. "Dolius," 185
Screen Rack Towers, Ferro-Concrete, O'Shaughnessy Dam, San Francisco Water Supply, 95*
— Vibrating, Electro-Magnetic, for Coal, 304, 690*
— — Mechanical Type, for Coal, 716*
Screw-Cutting Lathe. See *Lathe* under *Machine Tools*
— Propellers. See *Propellers; Aeronautics*
— Viscosity Pumps, Theory of, 825
Scutching Machine, Flax (Marshall, Sons & Co., Ltd.), 86*
Sea Water, Deterioration of Structures in, Report, 300
— — Velocity of Sound in, 792
Seacombe Ferry, Floating Landing Stage and Roadway, 557*
Seaplanes. See *Aeronautics*
Season Cracking, Arsenical Copper Tubes, 320, 365*
Seasoning of Timber, 347
Secondary Battery. See *Accumulator* under *Electric*
— Schools and Education. See *Education*
Sector Sluices, Automatic, Diversion Dam, San Francisco Water Supply, 220*, 283*
Sederholm, P., on Heat Conduction in Steel, 306*. See 302
Segregation in Steel Tubes, Detection by Sulphur Printing, 19
— Effect on Corrosion of Steel Tubes, 19
Seine, River, Water Power Development and Navigation, 361
Seismological Investigations, Report on, 256
Seismology. See also *Earthquake*
Selbie, R. H., on Suburban Railway Electrification, 452
Selenium Cells, Prof. Thirring's, 628
Selson Engineering Co., Ltd., Surface Grinding Machines, 735*
Selvey, W. M., Trials of Turbo-Generator, Bradford Power Station, 465
Selvig, W. A., on Ash Composition and Uses of Coal, 121
Semmens, Miss E. S., on Hydrolysis by Polarised Light, 289
Sempill, Col. the Master of, on Aero Engine Fuels, 485, 802
Sensible Heat Distillation, Ltd., Pulverised Smokeless Fuel for Boiler Firing, 720*
Separator, Carter Disc, for Wheat, 26
— Centrifugal, Corrosion and Erosion of Baskets, 113
— Hydraulic, for Coal, Draper, 719
— Oil, for Bilge and Ballast Water, 7, 28*, 384* See LETTERS, 72, 132, 209, 241
Seva Electric Soldering Iron, 418
Severn Tidal Power Scheme, Alternative Sites, 579, 599, 641, 672
Sewage Disposal, Activated Sludge Process, 49. See LETTER, 115
— — Delimitation of Drainage Areas, 49
— — and River Pollution, 333
— — Sludge Digestion Plant at Bath, 31
— Pollution, Water, Detection by Sulphur Bacteria, 223, 231*
— Sludge, Use on Land, Distribution by Pipe Line, 50
— See also PARAGRAPH INDEX
Sewers, Main, Design of, 81
Shaft, Crank. See *Crankshaft*
— Sinking, Colliery, Cementation Process, 719
Shafting and Pulleys, Fencing of, 359
Shaking Process, Refinement of Cast Iron, 240*
Shallow-Draught Oil Tanker "Ambrosio," Trials, 137
Shanghai Public Works Department, Report, 121
Shaughnessy, E. H., on the Rugby Wireless Station, 147*, 181*, 279*
Shearing Machine. See *Machine Tools*
Sheet Metal, Vibrating Shears for, 54*, 331
Sheffield, Metallurgical Development of, 43
— University, New Research Laboratories, 50; Mechanical Autographic Extensometer, 525*. See LETTER, 599
Shells, Armour-Piercing (Hadfields, Ltd.), 722* See 728
— See also *Projectiles*
Sheppard & Sons, Ltd., Draper Hydraulic Separator for Coal, 719
"Sheringham," Cargo Steamer, Trials, 578
Ship Canal. See *Canal; Navigation, Inland*
— under Construction, Lloyd's Statistics, 111, 484
— Diesel-Engined. See *Motor Ships; Marine Propulsion*
— Electric Propulsion. See *Marine Propulsion*
— Launching. See *Launching*
— Lloyd's Register Book, 248
— Longitudinal Strength of, Further Research on "Wolf" Experiments, 191*, 251*
— Lost, Lloyd's Statistics, 145, 327, 616, 817
— Model Experiments. See *Ship Resistance*
— Motor. See *Motor Ships; Marine Propulsion*
— Oil Separators for Bilge and Ballast Water, 7, 28*, 384*. See LETTERS. 72, 132, 209, 241
— Plates and Rivets, Corrosion of, 796*
— Propellers. See *Propellers*
— Propulsion. See *Marine Propulsion; Engines; Turbines; Propellers*
— Repairing Yards, Antwerp, 51
— Resistance, Work of Froude Tank, 35
— Salvage of. See *Salvage*
— Stresses in, Strain Meter Measurements, 8
— Tonnage Measurement (Review), 38
— See also *Marine; Motor Ships; Shipping; Steamers; Warships;* and PARAGRAPH INDEX
Shipbuilders and Engineers, North-East Coast Institution of. See *North-East Coast*
— — in Scotland, Institution of. See *Engineers*
Shipbuilding, German and British Competition, 360
— Lloyd's Register Report, 393
— Longitudinal Strength of Ships, Research on "Wolf" Experiments, 191*, 251*
— Naval. See *Warships*
— Vessels under Construction, Lloyd's Statistics, 111, 484
— See also *Steamers; Naval; Warships;* and PARAGRAPH INDEX
Shipping Annual, Brassey's, 1927 (Review), 810
— Bulk Cargoes (Review), 526
— Lloyd's Register Book, 248
— — Register, Report, 393
— Lost, Lloyd's Statistics, 145, 327, 616, 817
— Tonnage Measurement (Review), 38
— Vessels under Construction Lloyd's Statistics, 111, 484
Shock Tests. See *Impact Tests* under *Tests (Materials)*.
Shoosmith Type Cranes, Beckton Gas Works, 591*
Shop Management. See *Works Management*
Short Bros., Ltd., Trials of S.S. "Anglo-Peruvian," 240
Shovel, Steam. See *Excavating Machine*
Show. See *Exhibition*
Shrewsbury Power Station, Diesel Engine, 626*
Shutter, High-Speed, Ashdown Rotoscope, 686
Siemens-Martin Furnaces. See *Furnaces*
Sierra Leone Railways, Report, 657
Signalling Arrangements, Charing Cross and Cannon Street Stations, 721
Silcock, E. G., on an Artesian Borehole, 793
Silica Refractories, Drying and Burning, 385
— — Influence of Foreign Matter, 386
— — Influence of Iron Oxide, 385
— Vitreous, Thermal Conductivity, 69
Silicon-Aluminium Alloys. See *Alloys* under *Metallurgy*
— Iron Alloys, Constitution of, 369*
Sillimanite, Use as Glass Works Refractory, 823
— X-Ray Patterns, 823
Silk, Artificial, Drying and Conditioning Machines, 659*
— — Manufacture from Spruce Pulp, 782
Silumin, Properties and Structure, 318, 336*. See 341*, 458*, 492*
"Silversah," M.S., Trials, 489
Simon, L. J., Fat Extraction by Solvents, 131
Simons, W., & Co., Ltd., Dredger "Vizagapatam," 587
Simpson, Dr. G. C., on Atmospheric Electricity, 764
Sissons, E. P., on Sludge-Digestion Plant, 81
Skinner, F. W., on Foundation Work, Western Electric Co.'s Telephone Works, 187*, 253*
Sleeping Car, International Sleeping Car Co., Ltd., 751*, 785*
Sleeve Valves, Motor-Car Engine, Twelve-Cylinder Daimler, 533*
Slide Rule, Anido, for Fractional Indices, &c., 312
Sludge. See *Sewage*
Sluices, Sector, Automatic, Diversion Dam, San Francisco Water Supply, 220*, 283*
— Tidal Drainage, British Guiana, Provision of, 682*
Small Holdings and National Afforestation, 290
Smelting Furnaces. See *Furnace*
Smith, A. W., on Use of Manganiferous Materials in Steel Manufacture, 629
Smith, Dr. C. S., on Action of Hydrogen on Copper, 520*. See 320
Smith, Dr. E. W., on Smokeless Fuel, 131. See LETTERS, 241, 271. See also 166
Smith-Dunn Process, Increasing Yield of Oil Wells, 825
Smith, F. S., on Physics in Navigation, 791
Smith, J., the Late, 106
Smithells, Dr. C. J., on Deformation of Tungsten Crystals, 320
Smithfield Show, Royal Agricultural Hall, 732*
Smoke Abatement Exhibition and Congress, Birmingham, 331
— Prevention and Public Health, 746
Smokeless Fuel. See *Coal, Low-Temperature Carbonisation*
Smulders, A. F., 200-ton Floating Crane, 327
Snell, Sir J. F. C., on the Development of Electric Supply, 194. See 206
Soap Boiling, Steam-Jacketed Pan for, Explosion, 617
— and Detergent Industry, Glycerol Manufacture (Review), 438
Sockets, Soldering, Electric Cables, Standard Specifications, 383
Société Provençale de Constructions Navales, Trials of S.S. "Leconte de Lisle," 249
Societies, Chemical, Proposed Joint House, 129
— Technical and Scientific. See *Institutions*
— Trade. See *Labour*
Society of Motor Manufacturers and Traders. See *Motor Manufacturers*
Softener, Water. See *Water Softener*
Soho Square, London, Underground Automatic Substation, 485*
Soil Temperatures, Measurements of, 795
Solar Eclipse, England, 1927, Features of, 257
— — Expedition, Sumatra, 1926, Work of, 257
Solder, Brazing, Standard Specification, 357
Soldering Iron, Seva Electric, 418
— Sockets, Electric Cables, Standard Specifications, 383
Solenoid Brakes, Types and Characteristics, 435*
Solutions, Chemical, Effect in Fatigue Tests, Steel, 807*
— Phenomena of Electrical Conductivity, 207
Solvents, Extraction of Linseed Oil by, 131
Sorby, Dr. H. C., Work in Microscopic Metallurgy, 44
Sound Absorption by Building Materials, 639*
— Generator, Air-Jet, Dr. Hartmann's, 256
— Investigations, Acoustics of Public Buildings 605*, 638*, 667*
— Production and Measurement, 605*
— Proof Partitions, Floors and Ceilings, 668*
— Reverberations in Rooms, 639. See 667
— Transmission and Absorption by Partitions, 114, 236. See 668*
— Velocity, in Sea Water, 792
— Waves in Air, Photography of, 638*. See 657*
— — Investigations by Ripple Tank, 114, 638*
— Work of National Physical Laboratory, 113
Sounding, Echo, Admiralty Method, 792
South Africa, Irrigation of Kalahari Desert Report, 269
— — Modderfontein, Mine-Ventilating Fan, 226*
— — Rand Water Supply, Report on, 74
— Kensington Museum, Extensions and Development, 172; Calculating Machines, 657; Engineering Lectures, 731
— Metropolitan Gas Co., Steam Tug "George Livesey," 54
— Wales (Fire Protection) Engineers, Ltd., Fire Escape, 693
— — Institute of Engineers, Calculation and Measurement of Air Flow in Mines, by J. L. Hodgson, 58*, 122*; Cardiff Engineering Exhibition, 688*, 715*
— — and Monmouthshire School of Mines, Calendar, 264
— West, Notes from, 14, 45, 77, 107, 137, 169, 201, 233, 265, 297, 357, 387, 419, 449, 479, 509, 539, 571, 601, 633, 663, 695, 724, 757, 787, 817. See PARAGRAPH INDEX
— Yorkshire, Notes from, 15, 45, 77, 107, 137, 169, 201, 232, 264, 296, 326, 356, 386, 418, 448, 479, 508, 538, 570, 600, 632, 663, 695, 725, 757, 787, 816. See PARAGRAPH INDEX
Southampton Docks, Extensions, 384*
Southern Railway, Southampton Docks, Extensions, 384*; Lord Nelson Class Locomotive, 473*; Remodelling of Charing Cross and Cannon Street Stations, 721
"Southland," Motor Tug, Oil Engines, 475*
Spain, Water Power Development and Inland Navigation, 363
Specific Heat of Hydrogen, 650*
— — Steam, Determination, 650*, 681*. See 712
Specifications, Standard. See *Standard; Standardisation*
Spectra, Line, Analysis of, 225
Spectrum, Asymmetry of Stark-Effect Lines, 255
— of the Aurora, 20
Speed-Reduction Gears. See *Geare; Gearing; Marine Propulsion; Motor-Car Details*
— Regulation. See *Governing*
— Trials. See *Trials*
Speller, F. N., on Corrosion of Structural Steelwork, 631
Spelter Prices. See *Metal-Price Diagrams*
Spencer (Melksham), Ltd., Coal-Loading Plant, Port Talbot, 162*
Spherical Integrating Photometer, National Physical Laboratory, 126
"Spidola," Submarine, Latvian Navy, 516. See 364
Spillways and Dams, Isle Maligne Power Plant, Construction, 748*
— Syphon, O'Shaughnessy Dam, San Francisco Water Supply, 94*
Spiral Springs, Testing Machines for Fatigue Limit, 50
Spirit, Motor. See *Motor Fuels*
Spontaneous Combustion of Coal, Causes, 487, 679
Spraying, Metal, Treatise on (Review), 625
Spring Control of Locomotive Driving Wheel Play, 598*
— Design, Locomotive for Union Pacific Railroad, 598*
— Spiral, Testing Machines for Fatigue 50
— Steels, Heat-Treated, Properties, 313
Sprinkling Roads, Motor Vehicle for, 523*
— Stoker. See *Stoker*
Spur Gearing. See *Gears; Gearing; Marine Propulsion*
Sputtering of Metals on Collodion Films, 676
St. Lawrence Earthquake, Effect on Buildings, 482
St. Pancras Power Station, Pulverised-Fuel, Lopulco System, 567*
St. Paul's Bridge Scheme, Proposed Abandonment, 754, 760
Stack Drying of Crops, Report on, 591
Stainless Iron and Steel (Review), 142
Stamp, Sir J., on Monopolies of Materials, 129
Standards Association. See *Engineering Standards*
— Electrical Units, Work of National Physical Laboratory, 114. See 126
— Glossary, Electrical Engineering Terms, Criticism of, 223, 245. See LETTER, 395
Standard Specifications, Brass Bars and Sections, 97; Brazing Solder, 357; Direct-Current Switchgear, 694; Electric Cable Soldering Sockets, 383; Paint Ingredients, 45, 214, 579; Pipe Flanges for Land Use, 741; Portland Blast-Furnace Cement, 383; Radio Ebonite Panels, 807; Small Motors, 357
— Table, Cast Iron Flanges, Gas Pipes, &c., 667
— Thermo-Couples, International Tests, 69
— U.S. Bureau of. See *United States*
— Weights, National Physical Laboratory, 127
Standardisation, Colour, Work of National Physical Laboratory, 114
— Tests, Road Construction Materials, 411
— Work of Engineering Standards Association, 632
Stanford, F. O., on Delimitation of Drainage Areas, 49
Star-Delta Starter for Induction Motors, 656*
Stark-Effect Lines, Asymmetry of, 255
Starters, Motor. See *Motors, Electric*
State Railways. See *Railways*
Stations, Power. See *Power Stations*
Statistical Methods and Industrial Efficiency, 765, 773
Statistics, Industrial, Publication of, 47
— Trade. See *Trade*
Status of Naval Engineers, 18, 132
Steam Accumulators, Ruth's, Chemical Plant Exhibition, 145; Use in Combination of Steam and Water-Power Plants, 379
— Boats. See *Steamers*
— Boilers. See *Boilers*
— Carriage, Cowan's Early, Experience with, 543
— Determination of Adiabatic Index, 649* 681. See 712
— — of Specific Heat, 650*, 681*. See 712
— Engines. See *Engines*
— Flow through Nozzles. See *Nozzles*
— Heated Driers, Pulverised Fuel, Lopulco System, 381*
— — Rollers, Pyrometers for, 507*
— Heating Pipe, Failure of, 387
— — Pipe, Steel, with Wound-on Gills, 660*
— — Supply from Power Stations, 603
— Jacketed Pans, Explosions, 456, 617
— Lorries. See *Motor Wagons; Tractors*
— Pipe Explosion, S.S. "Lynntown," 617
— — Flanges, Standard Specification, 741
— Power Plants, Value of Increased Pressure, 636, 643*
— Properties of, Comparisons of Tables, 714
— — at High Pressures, Recent Experiments, 649*, 681*, 712*
— Superheater. See *Superheater*
— Trawler "Ennerdale," Boiler Explosion, 372
— Trials. See *Trials*
— Tug "George Livesey," South Metropolitan Gas Co., 54
— Users' Association. See *Manchester*
— Wagons. See *Motor Wagons; Tractors*
Steamer "Africstar," Trials, 766
— "Almeda," Launch, 12
— "Ambrosio," Shallow-Draught Oil Tanker, Trials, 137
— "Anglo-Peruvian," Trials, 240
— "British Governor," Oil-Tanker, Trials, 624
— "British Inventor," Oil Tanker, Trials, 233
— Cable-Laying, "Dominia," Trials, 227
— "City of Bath," Trials, 8
— "City of Oxford," Launch, 185; Trials, 757
— under Construction, Lloyd's Statistics, 111, 484
— "El Amir Farouq," Trials, 312
— Electric Propulsion. See *Marine Propulsion*
— "Firby," Trials, 16
— Geared Turbines for. See *Marine Propulsion*
— "Inanda," Stop-Valve Explosion, 372
— "Kenton," Launch, 662
— "King George V" for Clyde, with High-Pressure Geared Turbines, 321*
— "Landaff Castle," Trials, 741
— Launching of. See *Launching*
— "Leconte de Lisle," Trials, 249
— Lloyd's Register Book, 248
— Lost, Lloyd's Statistics, 145, 327, 616, 817
— "Lynntown," Steam Pipe Explosion, 617
— "Mernoo," Launch, 327; Trials, 386
— "Moyallon," Launch, 164
— "Nidarnes," Launch, 419, 674
— Oil Separators for Bilge and Ballast Water, 7, 27*, 384*. See LETTERS 72, 132, 209 241
— "Otterpool," Trials, 210
— "Plodder," Boiler Explosion Inquiry, 372
— "Plume," Oil Tanker, Launch, 23; Trials, 326
— Propulsion of. See *Marine Propulsion; Engines; Turbines; Propellers*
— "Pulpit Point," Oil Tanker, Launch 297; Trials, 510
— "Rajula," Trials, 816
— Resistance of. See *Ship Resistance*
— "Rohna," Launch, 265; Trials, 769
— Salvage of. See *Salvage*
— "Sheringham," Trials, 578
— Stresses in, Strain-Meter Measurements, 8
— "Stuartstar," Trials, 517
— "Sucre," Oil Tanker, Trials, 169
— Tonnage Measurement (Review), 38
— Towing, for Inland Navigation, 363
— Turbine, Comparisons with Motor Ships, 17. See *Erratum*, 37.
— "Tuscanstar," Explosion of Valve Chest, 802
— "Waipiata," Launch, 209
— See also *Engines; Marine Propulsion; Shipbuilding; Shipping; Ships; Turbines; Warships;* and PARAGRAPH INDEX
Steamships. See *Ships; Steamers; Warships*
Steels, Absorption of Gases in, 609, 678
— Alloy, for Aero-Engine Valves, 698
— — Etching Reagents for, 140
— — Molybdenum, Cerium and Related (Review), 98
— Armour-Plate Manufacture, History of, 728. See 722*
— Beams, Overstraining of Material in Bending, 743*
— Carbon and Chromium, Electrochemical Potentials, 430*

Steels, Case-Hardening of. See *Heat Treatment* under *Metallurgy*
— Cause of Temper-Brittleness, 553*, 582*
— Chemically-Resistant, for High and Low Temperatures, 113. See 144
— Corrosion-Resisting, for Chemical Plant, 112, 144
— — See *Corrosion*
— Direct Change Austenite to Troostite, 371*
— Fatigue of. See *Alternating Stress* under *Tests (Materials)*
— Foundry. See *Foundry*
— Framed Buildings, Corrosion of Steelwork, 631
— — Buildings, Miami, Florida, Hurricane Damage, 711
— Furnaces. See *Furnaces*
— Gases in, Determination, 609, 678
— Heat Treatment of. See *Heat Treatment* under *Metallurgy*
— Houses, L.C.C. Housing Scheme, 140, 240
— Import and Export Trade, 607*
— Industry, Swedish, Development of, 301
— — Swedish, Notes on Jernkontoret, 301
— Machinery Parts, Protection from Rusting by Grease, 4
— Manufacture. See *Metallurgy*
— Masts, Rugby Wireless Station, 279*
— Microstructure of. See *Microphotographs; Metallography*
— Nickel, Heat Treatment of, Effect of Mass, Criticism of Experiments, 109
— Plates, Prices. See *Metal-Price Diagrams*
— — Stresses near Holes, 240
— Pontoons, Floating Landing Stage, Seacombe Ferry, 557*
— Pressed, Pit Trams (Butterley Co. Ltd.), 692*
— Rails. See *Rails; Metal-Price Diagrams*
— Rings, Case-Hardened, Distortion of, 470*
— Rolling Mills. See *Rolling Mills*
— Ropes. See *Wire Ropes*
— Spring, Heat-Treated, Mechanical Properties, 313
— Stainless (Review), 142
— Stress Distribution in. See *Stress; Tests (Materials)*
— Surface Decarburisation of, 313, 462*
— Tests of. See *Tests (Materials)*
— Thermal and Electrical Conductivity, 302, 306*
— Tool, Hardened, Tests of Mechanical Properties, 303, 309*
— Tubes, Corrosion of, Effect of Segregation, 19
— — Segregation in, Detection by Sulphur Printing, 19
— Tyres, Road Damage by, 271
— Wire for Wire Ropes, 542
— Works Practice, German Treatise (Review), 810
Steelwork, Structural, Aerial Masts, Rugby Wireless Station, 279*
— — Steel-Framed Buildings, Corrosion of, 631
Steering Gear, Motor Car. See *Motor-Car Details*
Sterilising Plant, Chlorine, for Water, Metropolitan Water Board, Walton, 10*
Stephen, A., & Sons, Ltd., Trials of Motor-Yacht "Mingary," 25
Stephenson, A., on Industrial Accidents, 289
Stevenson Creek, California, Experimental Arch Dam, Tests on, 562*
Stilgoe, H. E., Walton Filters and Pumping Station, 9*, 40*. See 111
Still Engine for Fishing Vessels (Plenty & Sons, Ltd.), 537*, 585*
— Sulphuric Acid, Explosion, Edge Hill, 456
Stillwell, S. T. C., on Seasoning of Timber, 347
Stobart, Dr. J. C., on Wireless Education, 349
Stobie System Ferro-Concrete Poles, 416*
Stock, R., & Co., Twist Drill with Oil Holes, 174
Stockdale, Dr. D., on Aluminium-Silicon Alloys, 492*. See 318
Stockholm Meeting, Iron and Steel Institute. See *Iron and Steel Institute*
Stokers, Mechanical, Bennis Sprinkler Type, Comparisons with Hand Firing, 691
Stone Cutting, Maintenance of Diamond Saws, 757
— Dusting in United States Collieries, 376
Stone, T. A. F., on Electric Locomotives, 674*. See 666, 669, 813
Stoner, Concentric, for Wheat, 27*
Stop Valves. See *Valves*
Storage Battery. See *Accumulator* under *Electric*
— of Fruit, Heat Evolution in, 113
"Storsten," M.S., Trials, 288
Stothert & Pitt, Ltd., Coaling Transporter for Queensland, 5*; Topils Level-Luffing Cranes, Fulham Gas Works, 103*
Stott, A., & Co., Ltd., Launch of S.S. "Kenton," 362
Stove, Air Heating, Domestic and Workshop Use, 331
Strain Meter Measurements, Stresses in Ships, 8
— See also *Stress*
Stream-Line Oil Separators, Bilge and Ballast Water, 7, 28*. See LETTERS, 72, 132, 209, 241
Street Accidents, Reduction of, Work of National Safety First Association, 574
— Railways. See *Tramways*
— Traffic, Cross-River, London, Report, 754*, 760. See LETTER, 825
— — Delays, Causes and Prevention, 390, 698
— — London, Report on, 380
— Watering, Motor Vehicle for, 523*
— See also *Roads*
Strength of Materials. See *Stress* and *Tests (Materials)*
Stress, Alternating and Combined. See *Tests (Materials)*
— Concentrations and Fatigue of Metals, 93. See LETTER, 427
— — Produced by Fillets and Holes, 222
— Meter. See *Strain Meter*
— Near Holes in Steel Plates, 240
— Optical Determination of. See *Optical*
— Repetitions. See *Alternating Stress* under *Tests (Materials)*
— in Rims of Rotating Discs, 12
— Ships' Plating, Further Research on "Wolf" Experiments, 191*, 251*
— — Strain Meter Measurements, 8
— Temperature, in Brake Wheels, 93
— Track, Indian Railways, Report, 252
Strikes. See *Labour*
Stroboscope, Ashdown, High-Speed Shutter, 686
Stromeyer, C. E., Memorandum on Oil Firing of Boilers, 667
Structural Steelwork. See *Steelwork*
— Strength of Ships, Further Research on "Wolf" Experiments, 191*, 251*
Structures, Damage in Florida Hurricane, 711
— Ferro-Concrete. See *Ferro-Concrete*
— Marine, Deterioration in Sea Water, Report on Research, 300
— Wind Pressures on, Model Experiments, 268
"Stuartstar," S.S., Trials, 517
Stub Gear Teeth, Strength of, 316*
Submarine Boats. See *Warships*
Submerged Pipe Line, Bay Crossing, San Francisco Water Supply, 683*
Substation, Automatic, Underground, Soho Square, London, 485*
— Outdoor, Khandallah, New Zealand, 794*
— Paris, Synchronous Motor-Generator Sets, 569*
— Switch Operation Recorder for, 718*
— Transformer, Portable, Bâle Exhibition, 174
Suburban Railway Electrification, Advantages and Costs, 452
"Sucre," S.S., Oil Tanker, Trials, 169
Suction Dredger. See *Dredger*
— Tubes, Hydraulic Turbines, Design of, 406*
Sugar Production from Sawdust, 130. See 144
Sulphur, Action in Steel Manufacture, 629
— Bacteria, Detection of Sewage Pollution, 223, 231*
— Printing, Detection of Segregation in Stee Tubes, 19
Sulphuretted - Hydrogen Poisoning, Texas Oilfields, 610
Sulphuric Acid, Effect in Fatigue Tests, 807*
— — Industry, Position of, 129; Research in, 414
— — Still, Explosion, Edge Hill, 456
Sumatra Solar Eclipse Expedition, 1926, Work of, 257
Sumner, A. W., on High-Pressure Gas Distribution, 409
Sun. See *Solar*
Sundberg, R., on Electrochemical Potentials of Steel, 430*
Supercharged Engine, Riley Motor Car, 534*
Supercharger for Motor-Cycle Engine (Coventry Victor Motor Co., Ltd.), 454
Superheater, High-Pressure, Experiments on Properties of Steam, 712*
— Locomotive. See *Locomotive*
Superheating, Use in Navy, 736
Supervising Electricians, National Association of, Economic Premiums, 508
Surface Condensers. See *Condensers*
— Decarburisation of Steel, 313, 462*
— Grinding Machine. See *Grinding Machine* under *Machine Tools*
— Temperature Measurements, Pyrometers for, 507*
— Tension Effects, Friction between Solid Surfaces, 619*, 654*
Surge Shaft, Ferro-Concrete, Mocassin Power Station, California, 497*
Surgical Work, Vacuum Pump for, 531
Survey, Photographic, of Burmese Forests, 360. See 595, 777
Surveying, Aerial, Development, 595, 777
— — Williamson Camera for, 595*
— Instruments, Ancient, Lewis Evans Collection, 223
Suspended Roof for Open-Hearth Furnaces, 494
Suspension Bridge, Bear Mountain, Hudson River, Cable Construction, 803*
— — Long-Span, Estimates of Quantities and Costs, 819, 827*
Sutcliffe, J., on Disposal of Town Refuse, 50. See 79, 80, 115
Sutton, H., on Protection of Aluminium from Corrosion, 274*. See 208
Sutton, T. C., on Gas Absorption in Steel, 678
Suyehiro, K., on Gyroscopic Vibration of Steam Turbine Discs, 581*
Swales, J. K., on Belmont Reservoir Repair Work, 193
Swan, Hunter & Wigham Richardson, Ltd., S.S., "City of Oxford," 185, 757; Cable-Laying Steamer "Dominia," 227; S.S. "Mernoo," 327, 386; S.S. "Nidarnes," 419, 674; Trials of S.S. "British Governor," 624
Swansea University College, Prospectus, 418
Sweden, Hydraulic Testing Laboratory, Verkstaden Kristinehamn, 374*, 405*, 439*
— Export of Electrical Energy, 377
— Lilla Edet Power Plant, Design of Turbines, 155*. See *Errata*, 232
— Railway Electrification in, 425
— Water Power Development, 362, 363, 364
Swedish Iron Industry, Development of, 301
— Iron Masters' Association, Jernkontoret, Notes on, 301
— Iron Ore Mining, Development of, 302
— Meeting, Iron and Steel Institute. See *Iron and Steel Institute*
Swiss Association of Steam Boiler Users, Report, 62: Report on Riveted and Welded Joints, 489
— Railway Tunnel, Fatal Accident from Locomotive Fumes, 556
Switches, Contactor, Brookhirst Motor-Starting Panels, 180*
— Motor-Starting. See *Motors, Electric*
— Operation Recorder for Substations, 718*
— for Solenoid Brakes, 436*
Switchgear, Automatic Substation, Soho Square, London, 485*
— Colliery, at Cardiff Exhibition, 719
— — Flameproof Vent for, 718
— Control Panel, Rotary Converter, Sydney Suburban Railway Electrification, 433*
— Direct-Current, Standard Specifications, 694
— for Mines, Prevention of Flame Propagation by Perforated Plates, 166
— Prevention of Accidents, 360
Switzerland, Bâle, Water Power and Inland Navigation Exhibition, 173
— Export of Electrical Energy, 377
— Progress in Water Power Plants, 364
Switzerland, Railway Electrification in, 424
— River Rhone Water Power Developments, 173
— World Power Conference at Bâle. See *World Power Conference*
Sydney Harbour Bridge Contract, Testing Machine, 134*; Drilling Machines, 164*
— Suburban Railway Electrification, 432*
Synchronous Motors. See *Motors, Electric*
Synthetic Ammonia and Nitrates, Ltd., Pulverised Fuel Plant and Boilers, 381*. See LETTER, 443
Syphon, Inverted, Aqueduct, Hetch-Hetchy Water Supply, San Francisco, 621*
— Spillway, O'Shaughnessy Dam, San Francisco Water Supply, 94*
Systems, Shop. See *Works Management*
Szlumper, Sir J. W., the Late, 538

T.

TABLES, Steam Properties, Comparisons, 714
"Tacoma," M.S., Launch, 233
Tadanac, B. C., 400-ft. Concrete Chimney, 35*
Tait, W. H., on Season Cracking of Copper Tubes, 365*. See 320
Talbot, 14-45 h.p. Motor Car, 535*
Tangential Water Wheels. See *Pelton Wheels*
Tank, Experimental, Froude National, Work of, 35
— — Proposed, Seaplane Research, 237
— Locomotives. See *Locomotives*
— Petrol, Evaporation Losses, 120; Prevention by Balloons, 5
— Ships, Motor. See *Motor*
— Steamers. See *Steamers*
— Wagon, Motor, Street Watering, &c., 523*
Tansa Completion Works, Bombay Water Supply, 314*
Tar Macadam Plant, 14-ton Ransome, 131*
Tariff Amendments, Australian, 264
Taxation, Motor Car, and the Road Fund, 575
— — Car, Statistics, 97, 792
Taylor, J. L., on Ship-Strain Observations, 8
— System, Works Management, in, United States, 471
Technical Education. See *Education*
— Literature, Distribution of, 423
— Societies. See *Institutions* and PARAGRAPH INDEX
Teeth, Gear. See *Gear*
Telegraph Construction and Maintenance Co., Ltd., Cable-Laying Steamer "Dominia," 227
Telegraphy, Wireless, Action of Heaviside Layer, 443*, 487
— — Development of, 543, 587
— — Direction Finding, Work of National Physical Laboratory, 126
— — First Transatlantic Signals, 761
— — Investigations of Piezo-Electric Quartz Resonator, 13
— — Marconi, Short-Wave Beam System, Theory of, 514*; Development, 543, 587; Dorchester Transmitting Station, 515*; Bodmin and Bridgwater Stations, Post Office Canadian Service, 528*. See 515, 543, 587
— — Measurements of Signal Strength, 126
— — Navigation by, 15, 126
— — Rugby Station, 147*, 181*, 279*
— — Standard Ebonite Panels, 807
— — Tuning-Fork Frequency Control, 148*
— — See also *Valves, Thermionic*
— See also *Electricity* in PARAGRAPH INDEX
Telephone Communication Systems (Review), 176
— History and Development of, 19. See LETTER 54
— Works, Western Electric Co., Foundation Work, 187*, 253*
Telephony, Types of Microphones and Loud Speakers, 605*
— Wireless, Action of Heaviside Layer, 443*, 487
— — Apparatus at Olympia Exhibition, 330
— — Education by Broadcasting, 349
— — High-Tension Current Supply from Lighting Mains, 330
— — Marconi Equipment at Basra, 272
— — Standard Ebonite Panels, 807
— — Types of Microphones and Loud Speakers 605*
— — See also *Valves, Thermionic*
— See also *Electricity* in PARAGRAPH INDEX
Telpher Plant, Coal-Handling, Poole and Pitwines Gas Works, 779*
Temper-Brittleness, Steel, Causes of, 553*, 582*
Temperature Fluctuations, Natural-Gas Pipe Lines, 648
— and Humidity of Air in Factories, 102
— Measurements, Surface, Pyrometers for, 507*
— Soil, Measurements of, 795
— Stresses in Brake Wheels, 93
Tempering. See *Heat Treatment* under *Metallurgy*
Tenders, Locomotive. See *Locomotive*
Tensile Tests. See *Tests (Materials)*
Tension, Surface. See *Surface Tension*
Teredo, Protection of Timber against, 300
Ternary Alloys. See *Alloys* under *Metallurgy*
Testing Chamber, Over-Speed Tests, Turbine and Generator Rotors, 824*
— Coke for Blast Furnaces, 13
— Laboratory. See *National Physical*
— Machines. See under *Tests (Materials)*
— Station, Hydraulic Turbines, Verkstaden Kristinehamn, Sweden, 374*, 405*, 439*
— See also *Tests (Materials); Trials*
Tests, Aeronautical. See *Aeronautics*
— Boiler, Woodeson Type, Fired with Pulverised Smokeless Fuel, 720*
— Corrosion. See *Corrosion*
— 15,000-h.p. Diesel Engine, Hamburg Power Station, 555*. See 117*
— Efficiency, Hydraulic Turbines, Definition of Net Head, 441
— Ljungström Turbo-Generator, 494
Tests, Marine Oil Engines, Report of Committee, 761*, 767*, 781, 799
— — Oil Engine, United States Shipping Board, 352

Tests (Materials):

Alpax Aluminium Alloy, Tests at High and Low Temperatures, 485
Alternating Stress, Fatigue of Metals and Stress Concentrations, 93. See LETTER 427
— — Tests, Cast Iron, 429*. See 224
— — Tests, Effect of Torsional Stresses, 222, 242*
— — Tests, Investigations of Slip, 516
— — Tests, Steel, in Chemical Solutions, 807*
— — Tests, Torsion, Single Aluminium Crystals, 4, 320, 422. See 516
— — Testing Machine, Electro-Magnetic, 722*
Beams, Steel, Overstraining of Material in Bending, 743*
Bending Tests, Hardened Steel, Testing Machine for, 310*. See 303
Cement Consistency Tests, Report of Building Research Department, 821
— Testing Machines, Sheffield University, 50
Consistency Tests, Cement, Report of Building Research Department, 821
Extensometer, Autographic, Mechanical Type, Sheffield University, 525*. See LETTER 599
Hardness Tests, Brinell, Dial-Gauge Depth Indicator, 784*
— — Hardened Tool Steel, 312*. See 303
Impact Tests, Hardened Tool Steel, 311*. See 303
— — Notched-Bar, Comparison with Static and Dynamic Tensile Tests, 398*
Notched-Bar Impact Tests. See *Impact Tests* (above)
Road-Construction Materials, Standardisation of Tests, 411
Sand and Cement-Testing Machines, Sheffield University, 50
Stress Determination, Optical. See *Optical* — in Materials and Structures. See *Stress*
Tensile Tests, High-Temperature, Armco Iron, Steel and Alloys, 4
— — Static and Dynamic, Comparison with Notched-Bar Tests, 398*
Testing Machine, Alternating Stress, for Cast-Iron Specimens, 429*. See 224
— — Alternating Stress, Electro-Magnetic, (C. Schenck), 722*
— — Bending Tests, Hardened Steel, 310*. See 303
— — for Fatigue Limit, Spiral Springs, 50
— — High-Temperature Tests, Sheffield University, 50
— — Mechanical Autographic Extensometer for, 525*. See LETTER, 599
— — Repeated Bending, Effect of Torsional Stresses, 242*. See 222
— — Torsion, for Fine Wires (A. J. Amsler & Co.), 679*
— — 1,250-ton Universal, for Sydney Harbour Bridge Contract, 134*
Timber Testing, Standard Methods, 347. See *Erratum*, 516
Tool Steel, Hardened, Tests of Mechanical Properties, 303, 309*
Torsion Testing Machine for Fine Wires (A. J. Amsler & Co.), 679*
— Tests, Reversed, Single Aluminium Crystals, 4, 320, 422. See 516
Torsional Stresses, Effect in Repeated Bending Tests, 222, 242*
Wire Ropes, Non-Destructive Tests, 200
Yield Point, Bending Tests of Beams, 743*
Tests, Road-Construction Materials, Standardisation, 411
— 20,000-kw. Turbo-Generator, Valley Road Power Station, Bradford, 465
Texas Oilfields, Hydrogen-Sulphide Poisoning, 610
Text Books. See LITERATURE INDEX
Textile Industry, Wages Deductions for Bad Work, 821
Thames, River, Ferro-Concrete Road Bridge, Caversham, 343*
— — Proposed Bridges, London, 754*, 760. See LETTER, 825
Theatres, Acoustic Properties, 667*
Theodolite, Ancient, Lewis Evans Collection, 223
Thermal Balance, Werkspoor Marine Oil Engine, 799. See 764, 781
— Conductivity, Iron and Steel, Investigations 302, 306*
— — Tests, National Physical Laboratory, 69*, 113
— Treatment, Metals. See *Heat Treatment* under Metallurgy
Thermionic Valves. See *Valves: Telegraphy, Wireless; Telephony, Wireless*
Thermit Welding, Iron and Steel, 630
Thermo-Couples, Standard, International Tests, 69
— — See also *Pyrometer*
Thermodynamics, Kinetic Theory of Gases and Molecular Aggregation, 701
— Properties of Steam at High Pressures, 649*, 681*, 712*
— Refrigerators, CO_2 Type, Cooling of Working Fluid, 206
— Second Law, and Karpen Concentration Cells, 141
— Steam, Determination of Adiabatic Index, 649*, 681. See 712
— — Determination of Specific Heat, 650*, 681*. See 712
— — Properties of, Comparisons of Tables, 714
— — Turbines, Pressure Distribution in, 365*. See 224
— Value of Increased Steam Pressure, 636, 643*
Thermometers, Testing, Work of National Physical Laboratory, 113
Thin Films, Collodion, Production of, 676

Thirring, Prof., Selenium Cells, 628
Thomas, H. K., on the Debt of the Community to the Automobile, 451
Thompson, A. B., on Surface Oil Indications, 483
Thompson, J. L., & Sons, Ltd., Trials of M.S. "Silverash," 489
Thompson Water-Tube Boilers, Pulverised-Fuel Equipment, Billingham Synthetic Ammonia Works, 381*
Thornton, B. N., on High-Speed Economisers, 592*. See LETTERS, 672, 701
Thorpe, Dr. J. F., on Organic Chemistry, 257
Thorpe Power Station, Norwich, 576*
Throttle Valve. See *Valve*
Throttling Calorimeter, Differential, Determination of Specific Heat of Steam, 681*
Thrust Bearing. See *Bearing*
— Pier, Concrete, Pipe Line, Bay Crossing, San Francisco Water Supply, 683*
Thunderstorms, Causes of, 764
Thurston, Dr. A. P., on Classification of Patent Specifications, 224
Tidal Drainage, British Guiana, Sluice Provision for, 682*
— Power Schemes, Possible Sites, 579, 599, 641, 672
Tilden, Sir W., the Late, 752
Timber Growers, Estate Saw Mills for, 348
— Houses, L.C.C. Housing Scheme, 140, 249
— Preservation in Sea Water, Report, 300
— Seasoning, Testing and Uses, 347. See *Erratum*, 516
Timoshenko, S., on Stress Concentration Produced by Fillets and Holes, 222
Tin Alloys. See *Alloys* under *Metallurgy*
— and Tinplate Prices. See *Metal-Price Diagrams*
Tippler, Wagon, Hydraulic, Port Talbot, 163*
— — Weighing at Preston, 69*
Tokyo Earthquake, Effect on Ferro-Concrete Structures, 46
"Tolford," Dredger, Launch, 364
Tomlinsons (Rochdale), Ltd., Drying and Conditioning Machines, 659*
Tonks, Prof. H., on Science and Art, 235
Tonnage Measurement, Historical and Critical Essay (Review), 38
Tool, Machine. See *Machine Tools*
— Pneumatic. See *Machine Tools*
— Steel. See *Steel*
Toothed Gear. See *Gear; Gearing; Marine Propulsion*
Toplis Level-Luffing Cranes, Fulham Gas Works, 103*
Torpedo Boats and Destroyers. See *Warships*
Torpedoes, Methods of Propulsion, 550
Torsion Balance, Eötvös, 101*
— Dynamometer, Recording, Parker & Jackman's, 764*
— Testing Machine for Fine Wires, 679*
— Tests. See *Tests (Materials)*
Torsional Stresses, Effect in Repeated Bending Tests, 222, 242*
Towers, Cooling, Film Type, 719
— Screen Rack, Ferro-Concrete, O'Shaughnessy Dam, San Francisco Water Supply, 95*
— Steel, for Aerial, Rugby Wireless Station 279*
Towing Vessels for Inland Navigation, 363
Town Gas. See *Gas*
— Planning and Road Traffic, 412
— Refuse, Disposal of, 50, 79, 80. See LETTER, 115
Townsend, Prof. J. S., on Collisions between Electrons and Molecules, 255
Track Stresses, Indian Railways, Report, 252
Trackless-Trolley System, Road Traction. See *Railless*
Traction, Electric. See *Railways; Railless; Tramways*
— Engine Boiler Explosion, 802
Tractor, Caterpillar, Ruston & Hornsby Excavator, 568*. See *Erratum*, 816
— Electric, Ploughing, 211*. See 206, 423
Trade, Australian Tariff Amendments, 264
— British, with Egypt, 300, 699
— — with Poland, 475
— Chilian Report on, 110
— Disputes. See *Labour*
— East Africa, Report, 172
— Exhibition. See *Exhibition*
— German Export, in Machinery, 784
— Import and Export, Engineering and Allied Industries, 607*
— Indian Import, Statistics, 369
— Motor Car Export, Statistics, 565
— of Newfoundland, Report 48,
— Refuse and River Pollution, 323
— Survey, British Electrical and Allied Manufacturers' Association, 702
— Unions. See *Labour*
Traffic, Cross-River, London, Report on, 754*, 760. See LETTER, 825
— Road, Causes and Prevention of Delays, 698
— — Census of, 412, 604
— — London, Report on, 389
— — Statistics of Motor Cars, 565
Training. See *Education*
Trains, Express, Track and Air Resistance (Review), 777
— See also *Railway*
Trams, Pit, Griffiths' Door for, 693
— — Pressed Steel (Butterley Co., Ltd.), 692*
Tramways, London, and Traffic Problem, 389
— See also PARAGRAPH INDEX
Transformation Points, Metals. See *Metallurgy*
Transformer Substation, Portable, Bâle Exhibition, 174
Transmission Dynamometer. See *Dynamometer*
— Electric, Ship Propulsion. See *Marine Propulsion*
— Gear. See *Gear; Gearing; Marine Propulsion; Motor-Car Details*
— of Power. See *Marine Propulsion; Power Transmission*
Transmutation of Elements by Low-Voltage Currents, 255
Transport, Aerial. See *Aeronautics*
Transport, Institute of, Premium Awards, 387; Graduateship Examination, 448, 508; Suburban Railway Electrification, by R. H. Selbie, 452; Annual Dinner, 667; Presentation of Charter to, 667
— Marine, Bulk Cargoes (Review), 526
— Ministry of, Motor Taxation Statistics, 97, 792; Note on Road Damage by Steel-Tyred Vehicles, 271; Report on Railway Accident, Bishop's Stortford, 268; Ferro-Concrete Road Bridge, Caversham, 343*; Census of Road Traffic, 604. See 412
— Motor. See *Road; Motor*
— Railway. See *Railway*
— Refrigerated, of Apples, 205. See LETTER, 303
— Road. See *Road; Motor; Railless*
Transportation of Petroleum, United States, 120
Transporter, Coal-Handling, Poole and Pitwines Gas Works, 779*
— —Handling, 20-ton Electric, at Bowen, Queensland, 5*
Transverse Tests. See *Tests (Materials)*
Traun River, Austria, Ferro-Concrete Bridge over, 622*
Travelling Crane. See *Crane*
— Hopper Feeder for Belt Conveyors, Beckton Gas Works, 650*. See 589*
Trawler "Ennerdale," Boiler Explosion, 372
— Plenty-Still Oil Engine for, 537*, 585*
Trials, Boiler, Woodeson Type, Fired with Pulverised Smokeless Fuel, 720*
— 15,000-h.p. Diesel Engine, Hamburg Power Station, 555*. See 117*
— Ljungström Turbo-Generator, 494
— Marine Oil Engine, Report of Committee, 761*, 767*, 781, 799
— — Oil Engine, United States Shipping Board, 352
— 20,000-kw. Turbo-Generator, Valley Road Power Station, Bradford, 465
— See also *Tests*
Triple-Expansion Engines. See *Engines, Steam*
Tritton, Sir S., on Loading Gauges, 482
Trojan Motor Car, 504*
Trolley, Trackless, Road Traction. See *Railless*
Troostite in Steel, Direct Change from Austenite, 371*
Truck Acts and Wages Deductions for Bad Work, 821
— Four-Wheeled Leading, with Roller Centring Device, Locomotive for Union Pacific Railroad, 598*
— Railway. See *Wagons*
— Two-Wheeled Trailing, Locomotive for Union Pacific Railroad, 598*
— See also *Bogie*
Truro City Council, Improvement of the River Fal, 702
Tubes, Condenser, Scaling Tools for, 611*
— Copper, Arsenical, Season Cracking of, 320, 365*
— Railways. See *Underground Railways*
— Steel, Corrosion of, Effect of Segregation, 19
— — Segregation in, Detection by Sulphur Printing, 19
— Wells. See *Wells*
— See also *Pipes*
Tubs, Mine, Griffiths' Door for, 693
— — Pressed Steel (Butterley Co., Ltd.), 692*
— — Runaway Catch for, 252
Tucker Hot-Wire Microphone, Sound Measurement, 606*
Tugs for Inland Navigation, 363
— Motor, "Southland," Oil Engine for, 475*
— Steam, "George Livesey," South Metropolitan Gas Co., 54
Tungsten Crystals, Deformation of, 320
— Effect of Working on Properties, 676
— Metallurgy and Applications (Review), 625
Tuning-Fork Frequency Control, Rugby Wireless Station, 148*
Tunnel Aqueduct, San Francisco Water Supply, Construction, 284*, 411, 621*. See 64*
— Circulating Water, Construction of, Western Electric Co.'s Telephone Works, 188*
— Dryers for Refractory Materials, 385
— Swiss Railway, Fatal Accident from Locomotive Fumes, 556
Tuolumne River Scheme, San Francisco Water Supply. See *Hetch-Hetchy*
Turbines, Hydraulic, Bâle Exhibition, 173
— — Cavitation in, Model Investigations, 407, 439*
— — Construction in Germany, 708*
— — Design of Suction Tubes, 406*
— — Efficiency Tests, Definition of Net Head, 441
— — Helical, Lawaczeck Type, Theory of Design, 155*. See *Errata*, 232
— — 45,000-h.p., Isle Maligne Power Station, 747*
— — Methods of Determining Efficiency, Comparisons, 334. See 441
— — Progress in Design, 364
— — Testing Station, Verkstaden Kristinehamn, Sweden, 374*, 405*, 439*
— — See also *Power Plant; Pelton Wheels*
— Internal-Combustion, Possibilities of, 18
— Pumps. See *Pumps, Centrifugal*
— Rooms, Austrian Warships, Ventilation of, 285*, 345*
— Steam, Accidents to, Report, 204
— — Blading for. See *Blades; Blading*
— — Chorlton Governors for, 87*
— — Conical Arrangement of Blading, 1
— — Geared, and Centrifugal Pumps, Walton Pumping Station, 42*
— — Gyroscopic Vibration of Discs, 581*
— — High-Pressure, at Boston, 240
— — High-Pressure, for S.S. "King George V," 323*
— — Improving Efficiency, 61
— — 20,000-kw. Impulse-Reaction Type, for Bradford (English Electric Co., Ltd.), 465*
— — Impulse Type, Pressure Distribution at Varying Loads, 365*. See 224
— — for Inland Navigation Craft, 363
— — 5,000–7,000 kw. Ljungström, Tests, 494
— — Marine, Comparisons with Diesel Engines, 17. See *Erratum*, 37
Turbines, Steam, Marine, Geared. See *Marine Propulsion*
— — Multi-Stage Bleeding for Feed Heating, 61
— — Nozzles Research, Deductions from, 495*
— — Reaction, Limiting Efficiency, 1
— — Stresses in Rims of Rotating Discs, 12
— — Supply of Heating Steam from, 603
— — Value of Increased Pressure, 636, 643*
— — Testing Chamber for Over-Speed Tests of Rotors, 824*
— — See also *Turbo-Generators*
Turbine Steamers, Ltd., Clyde Passenger Steamer "King George V," 321*
— — See *Steamers; Warships*
Turblex Drying Machines, 659*
Turbo-Compressors, Uses of, 549
— Electric System, Ship Propulsion. See *Marine Propulsion*
— Generator, 41,000-kw., for Barton Power Station, 513
— — 10,000-kw., Derby Power Station (C. A. Parsons & Co., Ltd.), 545*
— — 5,000–7,000-kw. Ljungström, Tests, 494
— — 20,000-kw., Impulse-Reaction Type for Bradford (English Electric Co., Ltd.), 465*
— — 5,000-kw., Norwich Power Station (British Thomson-Houston Co., Ltd.), 576*
— — Testing Chamber for Over-Speed Tests of Rotors, 824*
— — Value of Increased Steam Pressure, 636, 643*
— — Valve-Chest Explosion, Barking Power Station, 617
— Simplex Drying Machines, 659*
Turbulent Combustion of Pulverised Fuel, 267
Turner, Lieut.-Col. F. W., on Flour Milling Machinery, 26*, 55*, 91*.
Turner, P. C., on a Mechanical Autographic Extensometer, 525*. See LETTER, 599
Turning. See *Machine Tools*
Turret Lathes. See *Lathes* under *Machine Tools*
"Tuscanstar," S.S., Explosion of Stop Valve Chest, 802
Twist Drill. See *Drill* under *Machine Tools*
Twyman, F., Award of Duddell Medal to, 832
Tyndall Lectures, Acoustics of Public Buildings, 605*, 638*, 667*
Tyne Iron Shipbuilding Co., Ltd., S.S. "Kenton," Launch, 662
Tyres, Solid and Pneumatic, Motor Wagons, Impact Loads on Roads, 697
— Steel, Road Damage by, 271

U.

UNDERGROUND Automatic Substation, Soho Square, London, 485*
— Railways, London, Extension to Morden and Kennington, 327, 355
Underwood and its Uses, 348
Unemployment. See *Labour*
Ungerer, A., on German Turbine Construction, 708*
Union-Castle Mail Steamship Co., Ltd., M.S. "Carnarvon Castle," 21*; S.S. "Landaff Castle," 741
— Pacific Railroad, 4-12-2 Type Three-Cylinder Locomotive for, 291*, 413*, 519*, 598*
Union Steamship Co., of New Zealand, Ltd., S.S. "Waipiata," 209
— Trade. See *Labour*
United Alkali Co., Ltd., Widnes Power Station, 15
— States and Australia, Work and Wages in, 160*
— — Bureau of Mines, Explosibility of Coal Dust, 39; Flotation of Limestone from Siliceous Gangue, 45; Iron Industry of United States, 60; Industrial Dust Respirators, 106; Report on Explosions in Pulverised-Coal Plants, 237; Stone Dusting in Mines, 376; Recovery of Crude Oil from Sand, 400; Classification of Oil Bases, 413; Stream Pollution by Mine Drainage, 418; Lead Production in United States, 441; Bibliography on Zinc Retorts, 464; Commercial Utilisation of Peat, 501; Hydrogen-Sulphide Poisoning in Texas Oilfields, 610; Temperature Fluctuations in Natural-Gas Pipe Lines, 648; Gas Making and Fuel Problems in California, 709; Ore Flotation Statistics, 741; Use of Compressed Air for Oil Production, 825
— — Bureau of Standards, Etching Reagents for Alloy Steels, 140; Non-Destructive Tests of Wire Ropes, 209; Sound Transmission and Absorption by Partitions, 236; Model Experiments, Wind Pressures on Structures, 268; Photography of Bullets in Flight, 490*; Use of Fused Quartz for Optical Flats, 764
— — and Canada, Exchange of Electric Power, 377
— — Combined Steam and Hydraulic Power Plants, California, 80
— — Florida Hurricane, Effect on Buildings, 711
— — Industrial Conditions, Comparison with British, 512
— — Iron Industry of, 60
— — Navy. See *United States* under *Warships*
— — Ore Flotation in, Statistics, 741
— — Railway Electrification in, 425
— — Railways, Diesel-Electric Locomotive, 150*
— — Railways. See also *Railways; Railroads*
— — Rating of Steam Boilers in, 268
— — Road Construction and Maintenance, 360, 361, 373
— — Safety First Movement, 574
— — San Francisco, Hetch-Hetchy Water Supply, 63*, 94*, 219*, 283*, 410*, 497*, 621*, 683*
— — Shipping Board, Worthington Diesel Engine for, 349*
— — Taylor System in, 481
United States, Transportation of Petroleum, 120
— — Water Power Development and Inland Navigation, 362
— — See also *America*
United Steamship Co., Ltd., M.S. "Jylland," 693
Units, Standard Electrical, Work of National Physical Laboratory, 114. See 126
University College, London, Engineering Scholarships, 137; Prospectus, 448, 508; Centenary Appeal Fund, 730
— — Swansea, Prospectus, 418
— of Iowa, Experiments on Discharge from Culverts, 653
— Oxford, Fatigue Tests, Steel, in Chemical Solutions, 807*
— — Institute of Agricultural Engineering, Report on Artificial Drying of Crops, 591
— of Sheffield, New Research Laboratories, 50
— See also *Education*
Uskside Engineering Co., Ltd., Colliery Haulage Gears, 680*
Uzallette System, Drying Refractory Materials, 385

V.

VACUUM Oil Co., Ltd., Trials of S.S. "Pulpit Point," 510
— Pump. See *Pump*
— Tube. See *Röntgen Rays; Telegraphy, Wireless; Telephony, Wireless; Valves, Thermionic*
Valley Road Power Station, Bradford, 20,000-kw. Turbine, 465*
Valves, Aero Engine, Alloy Steels for, 698
— Balanced, Larner-Johnson, O'Shaughnessy Dam, San Francisco Water Supply, 96*
— Chest, Explosion, Barking Power Station, 617
— — Explosion, S.S. "Tuscanstar," 802
— Drop, Steam Engine for Mine-Ventilating Fan, 226*
— Fuel-Injection, Diesel Engine for Dragline Excavator, 325*
— — Injection, Plenty-Still Marine Oil Engine, 586*. See 537*
— Gas, Cast-Iron Flanges, Standard Table, 667
— Gear, Joy, Engine for Steam Wagon, 81*
— Piston, and Valve Gear, Three-Cylinder Locomotive, Union Pacific Railroad, 414*
— Sleeve, Motor-Car Engine, Twelve Cylinder Daimler, 533*
— Stop and Emergency, 20,000-kw. Turbo-Generator, 468*
— — Explosion on S.S. "Inanda," 372
— Thermionic, Input Impedances, 756
— — Oscillation Generators, Rugby Wireless Station, 181*
— — Rectifying, Gas-Discharge Type, 330
— — See also *Telegraphy, Wireless; Telephony, Wireless*
— and Valve Gear, Bellis & Morcom Diesel Engine, 627*
— — Gear, Plenty-Still Marine Oil Engine 586*. See 537*
— — Gear. See also *Engines*
Vapours, Effect on Friction between Solid Surfaces, 619*, 654*
Variable-Frequency Currents, Production and Use, 31*, 99*, 150*
— Speed Gear. See *Gear; Motor-Car Details*
Velocity of Detonation of Explosives, Measurement, 152*
— of Sound in Sea Water, 792
Venezuela Gulf Oil Co., Trials of S.S. "Sucre," 169
Ventilating Fans, Mine, Operating Characteristics and Performance Curves, 121
— — Mine, Steam-Driven, Modderfontein, 226*
Ventilation of Factories, Reports, 102
— Mine, Measurement and Calculation of Air Flow, 58*, 122*
— Turbine Rooms, Austrian Warships, 285*, 345*
Ventilators, Jet Tube, for Workshops, 516
Venturi Meters, Recording, Resistance of Filter Beds, 123*
"Veracity," Herring Drifter, with Diesel Engine, 334
Verkstaden Kristinehamn Testing Station for Hydraulic Turbines, 374*, 405*, 439*
Vernon, Dr. H. M., on Comfort and Atmospheric Conditions in Works, 290
Vertical Retorts, Carbonisation of Holmside Coal in, 1*. See LETTERS 72, 133
— — Gas Manufacture, Birmingham Gas Department, 407
Vibrating Screen, Electric (C. W. Hunt Co., Inc.), 304
— — Electro-Magnetic, for Coal, 600*
— — Mechanical Type, for Coal, 716*
— Shears for Sheet Metal, 54*
Vibration Damper, Lanchester, Motor-Car Engines, 532*
— Gyroscopic, of Steam Turbine Discs, 581*
Vibro Plansifters for Flour Milling, 57*
Vicat Needle Test, Cement, Comparison with other Tests, 821
Vice. See *Machine Tools*
Vickers-Petters, Ltd., 600-h.p. Oil Engine for Motor Tug, 475*
Victor Oil Separator, Bilge and Ballast Water, 384*
"Viesturs," Mine Trawler, Latvian Navy, 516. See 364
Viscosity of Molten Glass, 68
— Pumps, Screw, Theory of, 825
Vitreous Silica, Thermal Conductivity, 69
Vivian, A. C., on Beryllium, 673*. See *Errata*, 725
"Vizagapatam," Hopper Dredger, Launch, 587
Voltage Harmonics, Effect in Power-Factor Correction by Condensers, 216*, 223
von Seth, R., on the Carburisation and Decarburisation of Iron and Steel, 460*. See 313
Vulcan Chain Pipe-Wrench, 68
Vulcanisation of Rubber Articles, 721
Vyrnwy Lake, Liverpool Water Supply, Oswestry Filter Beds, 123*

W.

WADDELL, J. A. L., on Long-Span Suspension Bridges, 827*. See 819
Wade, W. R., the Late, 632
Wages. See *Labour*
Wagons, Colliery, Griffiths' Door for, 693
— — Pressed Steel (Butterley Co., Ltd.), 692*
— Lits, Cie. Internationale des, Sleeping Car, 751*, 785*
— Motor. See *Motor Wagons; Tractors*
— Railway, End Tipper, at Port Talbot, 163*
— — Weighing Tipper at Preston, 69*
— — 40-ton Well, for L.M. & S. Railway, 263*
Waikaremoana Hydro-Electric Power Station, New Zealand, 794
"Waipiata," S.S., Launch, 209
Wakeman, S.W., on the Launch of Aircraft Carrier "Lexington," 737*, 770*
Walch, G. T., the Late, 752
Walker Brothers, Wigan, Ltd., Steam-Driven Mine-Ventilating Fan, Modderfontein, 226*
Wall, Core, Concrete Panel, Earth-Fill Dam, 410*
— Retaining, Ferro-Concrete, Arch, Ahmedabad, 464*
Wallasey Council, Seacombe Ferry Improvements, 557*
Walschaert Valve Gear, Three-Cylinder Locomotive, Union Pacific Railroad, 414*
Walton Filters and Pumping Station, Metropolitan Water Board, 9*, 40*, 111
Warfare, Naval. See *Warships*

Warships:

Admiralty Order and Status of Naval Engineers, 18, 132
Armour-Plate Manufacture, History of, 728. See 722*
Austrian Warships, Ventilation of Turbine Rooms, 285*, 345*
Battleships in Action (Review), 561
Cruisers, Mine-Laying, Development, 790
German Navy, Development of Mine-Laying Vessels, 790
H.M. Destroyer "Wolf," Experiments on Longitudinal Strength, Further Research, 191*, 251*
— Dockyard, Rosyth, Construction, 596
— Mine-Laying Cruiser "Adventure," 790
— Navy in Adversity (Review), 655
— — Progress of Marine Engineering, 736, 754
— — Status of Engineers, 18, 132
Latvian Navy, Mine Trawlers and Submarines for, 516. See 364
Mine-Laying Cruisers, Development, 790
— Trawlers "Imanta" and "Viesturs," Latvian Navy, 516. See 364
Naval and Shipping Annual, Brassey's 1927 (Review), 810
— Warfare, Battleships in Action (Review) 561
— — Development of Mine-Laying Cruisers, 790
— — Tactics in War of American Independence, (Review), 655
Russian Navy, Development of Mine-Laying Vessels, 790
Submarine "Spidola," Latvian Navy, 516. See 364
— Uses of Compressed Air, 550
— Use as Mine Layers, 791
Torpedoes, Methods of Propulsion, 550
United States Aircraft Carrier "Lexington," Launching Arrangements, 737*, 770*
— — Navy, Development of Seaplane Floats, 705*
— — Navy, Metal-Clad Airship for, 806
— — Navy, Use of Helium-Oxygen Mixtures in Diving, 678
See also *Naval* in PARAGRAPH INDEX
Washing and Conditioning Plant for Wheat, 27*
— Plant, Sand, for Filters, Metropolitan Water Board, Walton, 12*
Waste Heat, Exhaust Steam, Utilisation for Heating, 603
— — Recovery, Exhaust-Heated Boiler, Marine Oil Engines, 761*
— Industrial, Elimination of, 112
Watches, Testing at National Physical Laboratory, 127
Water, Bilge and Ballast, Oil Separators for, 7, 28*, 384*. See LETTERS, 72, 132, 209, 241
— Circulating, Film-Type Cooling Towers, 719
— Critical Temperature, Determination, 649*
— Engineers, Institution of, Water-Supply Finance, by A. W. Kenyon, 793; Design and Application of Centrifugal Pumps, by J. J. Hallam, 793; Repair of the Belmont Reservoir at Bolton, by J. K. Swales, 792; History of an Artesian Borehole, by E. J. Silcock, 793
Water Filters. See *Filters*
— Flow in Annular Waterways, 111. See LETTERS, 168 (*Erratum* 292), 303, 352
— — in Corrugated Pipes, Resistance to, 115
— — in Pipes and Conduits, Use of Reynold's Number, 474*
— Gas. See *Gas*
— Heaters. See *Feed-Water Heaters*
— Pipes, Eternit, Tests of, Italian State Railways, 702. See 770
— Power. See *Power, Water.* See also *Hydraulic; Power Plant, Turbine, Hydraulic*
— Screen Boiler Furnaces, Pulverised-Fuel Firing, 383*
— Sea, Velocity of Sound in, 792
— Sewage Pollution, Detection by Sulphur Bacteria, 223, 231*
— Softening Plant, Chemical Plant Exhibition, 144
— Sterilising Plant, Chlorine, Metropolitan Water Board, Walton, 10*
— Supply, Bolton, Belmont Reservoir, Repair Work, 793
— — Bombay, Tansa Completion Works, 314*
— — Bruston Auto-Pneumatic System, Princes Risborough, 454*
— — Clay Cross, 46
— — Finance, 793
— — Liverpool, Oswestry Filter Beds, 123*
— — London, Walton Filters and Pumping Station, 9*, 40*, 111
— — Mains and Meters, Italian Treatise (Review), 270. See 702
— — Oswaldkirk, Artesian Borehole, 793
— — Rand, Report on, 74
— — San Francisco, Hetch-Hetchy, 63*, 94*, 219*, 283*, 410*, 497*, 621*, 683*
— — Use of Centrifugal Pumps, 793
— — See also *Irrigation; Wells*
— Tube Boiler. See *Boiler*
— Turbines. See *Turbines, Hydraulic; Pelton Wheels; Power Plant*
— Wheels. See *Pelton Wheels; Turbines, Hydraulic; Power Plant*
Watering Roads, Motor Vehicle for, 523*
Waterloo Bridge, London, Proposed Widening, 760
Waterways, Annular, Frictional Resistance of, 111. See LETTERS, 168 (*Erratum*, 292), 303, 352
— See also *Rivers; Canals; Navigation, Inland*
Waterworks, Aberdeen, Inauguration, 427
— Administration (Review), 99
— Liverpool, Report, 592, 593
— See also *Water Supply* and PARAGRAPH INDEX
Wattmeters. See *Electric*
Waverley Cars, Ltd., 7-h.p. Motor-Car, 565
Waves, Earthquake, and the Earth's Central Core, 257
— Electromagnetic. See *Telegraphy, Wireless; Telephony, Wireless*
Wax-Melting Pan, Explosion of, 414
Wealth, Virtual Wealth and Debt (Review), 700
Wearn's Automatic Belt-Tensioning Drive, 733*
Weather. See *Meteorology*
Weaving Trade, Wages Deductions for Bad Work, 821
Webster's Phonometer for Sound Measurement, 606*
Weigher, Automatic, Blake-Denison, for Belt Conveyor, 652*
Weighing Machine, Hopper, for Coal (W. & T. Avery, Ltd.), 653*
— Tippler, Railway Wagon, at Preston, 69*
Weights, Standard, National Physical Laboratory, 127
Weirs, Measuring, Hydraulic-Turbine Testing Station, 405*
— Movable, Hydraulic Phenomena of, 54*, 701
Welch, R., Arc-Welding Controller, 176*
Welded and Riveted Joints, Boiler Construction, 489
Welding, Arc, Oxy-Acetylene, and Thermit, Iron and Steel, 629
— — Controller for, 176*
— Oxy-Acetylene, Safety Acetylene Generator, 691*
Well, Artesian, Water Supply of Oswaldkirk, 793
Wells, N., on Short-Wave Radio Communication, 514*. See 528*, 543, 587
— Oil, Increasing Yield by Compressed Air, 550, 825
Wente Condenser-Type Microphone, 606*
Werf Gusto 200-ton Floating Crane, 327
Werkspoor Diesel Engines, M.S. "Cape York," Report on Trials, 761*, 767*, 781, 799
Weser, A. G., Trials of Rotor Ship "Barbara," 427
West-African Palm-Oil Industry, Position, 330
West, J., on Drying and Burning Refractory Materials, 385
Western Australian Government, M.S. "Koolinda," 335
— — Mineral Resources, 640
Western Electric Co.'s Telephone Works, Foundation Work, 187*, 253*
Western Pennsylvania, Engineers' Society of. See *Engineers' Society*
Westinghouse Electric and Manufacturing Co., Electric Generator for Diesel-Electric Locomotive, 151*
Westminster Technical Institute, Prospectus, 418
Whaling Industry, Uses of Compressed Air, 551
Wharf Cranes. See *Cranes*
Wheat Preparing and Milling Machinery, 26*, 55*, 91*.
Wheels, Gear. See *Gears; Gearing; Marine Propulsion*
— Grinding. See *Grinding* under *Machine Tools*
White-Comyn Oil Separator, 29*. See 7
Whitworth Book (Review), 778
— Scholarships. See *Education*
Whizzers for Drying Washed Wheat, 27
Widnes Power Station, United Alkali Co., Ltd., 15
Wien, Prof. W., on the Asymmetry of Stark-Effect Lines, 255; on Electron Tracks in Photo-Electric and Compton Effects, 255
Wiggins, J. H., on Evaporation Losses of Petroleum, 120
Wilkinson, F., on Main Sewer Design, 81
Wilkinson, I., on Aluminium-Silicon Alloys, 492*. See 318
Williams, J. H., & Co., Vulcan Chain Pipe-Wrench, 68
Williams Prize, Iron and Steel Institute, 817
Williamson Camera for Aerial Surveying, 595*
Willey, G. B., on Chemically-Resistant Steels, 113
Willshaw, H., on Vulcanisation and Moulding of Rubber Articles, 721
Wilson, F. J., the Late, 448
Wilson, W., on Electric Braking, 435*
Wilton Steam-Jet Boiler Furnace, 691*
Wimperis, H. E., on the Rotating Wing in Aircraft, 246*. See 207
Winches, Electric Brakes for, 435*
Wind-Driven Electric Generators, Tests at Harpenden, 150
— Pressures on Buildings, Experiments on Models, 268
— — on Roofs, National Physical Laboratory Investigations, 4
— Tunnels. See *Aeronautics*
— Velocity in Florida Hurricane, 711
Winding Engines, Mechanical Parts of, 671
— Plant, Electrical, on Pit-Head Frame, Dutch Colliery, 258*
Wires, Fine, Measurement of Diameters, 127*
— — Torsion Testing Machine for, 679*
— Ropes, Bear Mountain Suspension Bridge, Hudson River, Construction of, 803*
— — Non-Destructive Tests, 200
— — Parallel Strand, Aerial Stays, Rugby Wireless Station, 281*
— Ropeway with Bucket Excavator, Sauerman System, 717*
— — Coal-Handling, Poole and Pitwines Gas Works, 779*
— for Wire Ropes, 542
Wireless Telegraphy. See *Telegraphy*
— Telephony. See *Telephony*
Wiring of Buildings, Regulations, 516
Witton-Kramer Electric Tool and Hoist Works, Solenoid Band Brake, 436*
Wöhler's Test. See *Alternating Stress* under *Tests* (*Materials*)
"Wolf," H.M. Destroyer, Experiments on Longitudinal Strength, Research, 191*, 251*
Wolf Safety Lamp Co. (Wm. Maurice), Ltd., Miners' Electric Lamps, 688; Acetylene Generator, 691*
Wonder Concrete Mixer, 718*
Wood, J. F. L., on Thermal Expansion and Transformation of Silica, 386
Wood, L. S., on Business Aspects of Forestry, 348
Woodeson Boiler, Pulverised Smokeless-Fuel Firing, 720*
Woodworking Machinery. See *Machine Tools*
Wool-Drying Machines, 659*
— Fibres, Hygroscopic Properties of, 256
Woollen and Worsted Industries Research Association, Hygroscopic Properties of Wool Fibres, 256
Woolwich, Disposal of Town Refuse, 50. See 79, 80, 115
— Research Department, Investigations of Macrostructure of Cast Metals, 88*; Report on Air Waves round Rifle Bullets in Flight, 657*; Experiments on Gas Absorption in Steel, 678
Working Costs, Heavy Oil Engines, Report, 822
Workman, Clark & Co., Ltd., Trials of M.S. "Orestes," 149; Trials of M.S. "Idomeneus," 326; Trials of S.S. "Llandaff Castle," 741
Workmen. See *Labour*

Works:

Gas Works, Portslade, Reconstruction, 392
Indian Railway Shops, Report on Management, 635
Ship Repairing Yards, Antwerp, 51
Western Electric Co.'s Telephone Works, Foundation Work, 187*, 253*
Works Accidents. See *Accidents*
— Management, Dictionary of Costing (Review), 270
— — Foremen and Planning Department, 471
— — Index of Comfort and Atmospheric Conditions, 290
— — Indian Railway Shops, Report, 635
— — Industrial Administration (Review), 426
— — Statistical Methods, 765, 773
— — System, British Thomson-Houston Company's Magneto Works, 445*
— — Taylor System in United States, 481
Workshops, Safety Regulations in, Report, 359. See 433
— Training. See *Apprentices; Education*
— See also *Works; Machine Tools*
Worksop Power Station, Oil-Engine Driven Generators, 811

World Power Conference, Sectional Meeting, Bâle:—

Preliminary Announcement, 51
Inland Navigation and Water Power Exhibition, 173
Opening Proceedings, 333
Utilisation of Water Power and Inland Navigation, 333, 361. See 173, 426, 441, 474*, 708*
Notes on the Definition of Net Head as used for the Determination of Turbine Efficiency, by R. Neeser, 441
Use of Reynold's Number as a Parameter in the Practice of Hydraulics, by E. Parry, 474*
German Turbine Construction, by A. Ungerer, 708*
Exchange of Electrical Energy between Countries, 377. See 426
Comparisons of Thermal and Hydraulic Generation, 378
Electricity in Agriculture, 423. See 426
Railway Electrification, 424
Resolutions, 426
Visits, Excursions, &c., 334, 426
Worm Gearing. See *Gearing*
Worthington Pump and Machinery Corporation, Marine Diesel Engine, 349*
Wreck Raising. See *Salvage*
— See *Accidents*
Wrench, J. D. M., Report on Indian Railway Workshop Management, 635
— Pipe, Vulcan Chain, 68
Wright, S. J., on Crystals of Aluminium under Reversed Torsional Stresses, 320. See 4, 422
Wright, W. E. on Strength of Stub Teeth, 316*
Wrought Iron. See *Iron*

X.

X-RAYS. See *Röntgen Rays*
Xylonite Models, Stress Determination. See *Optical*

Y.

Y ALLOY, Age Hardening of, Report, 605. See LETTER, 731
— — National Physical Laboratory Investigations, 68
Yancey, H. F., on the Air-Sand Process of Coal Cleaning, 120
Yarrow High-Pressure Boilers, S.S. "King George V," 322*
Yarrows, Ltd., Floating Caissons, Esquimalt Dry Dock, 583*
Year Books and Annuals. See LITERATURE INDEX
Yield Point, Bending Tests of Beams, 743*
Yorkshire Steam Wagon Co., 7-ton Steam Wagon, 81*

Z.

ZAMBESI River, and Irrigation of Kalahari Desert, 269
Zinc Alloys. See *Alloys* under *Metallurgy*
— Industry, Liége District, Development, 318
— Prices. See *Metal-Price Diagrams*
— Retorts, Bibliography of, 464

ONE-PAGE AND TWO-PAGE PLATES.

PLATE

I. Walton Filters and Pumping Station, Metropolitan Water Board: Plan and Sections of Primary Filters (facing page 10)

II. Walton Filters and Pumping Station, Metropolitan Water Board: Views of Primary and Secondary Filters (between pages 10 and 11)

III. Walton Filters and Pumping Station, Metropolitan Water Board: Views in Control House for Paterson and Candy Filters; of Centrifugal Booster Pumps; and of Air Compressors in Primary-Filter House (between pages 10 and 11)

IV. Walton Filters and Pumping Station, Metropolitan Water Board: Details of Secondary Filters (facing page 11)

V. Walton Filters and Pumping Station, Metropolitan Water Board: Views of Boiler House; of Turbine-Driven Pumping Set; and of New Engine House (facing page 40)

VI. Walton Filters and Pumping Station, Metropolitan Water Board: Side and End Elevations of Pumping Engine (between pages 40 and 41)

VII. Walton Filters and Pumping Station, Metropolitan Water Board: View of Vertical Triple-Expansion Engine and Reciprocating Pumps (facing page 41)

VIII. Steam Wagon, 6-Ton Compound, at Royal Agricultural Society's Show: Elevations, Plan and View of Engine; Details and Views of Back Axle and Differential Gear; Details of Front Axle and Steering Gear (Yorkshire Patent Steam Wagon Co.) (between pages 82 and 83)

IX. Hetch-Hetchy Water Supply, San Francisco: Sections and Details of O'Shaughnessy Dam (facing page 94)

X. Hetch-Hetchy Water Supply, San Francisco: General View of O'Shaughnessy Dam and Reservoir; Views of Syphon Spillway and of Dam from above (between pages 94 and 95)

XI. Hetch-Hetchy Water Supply, San Francisco: Details of Screen-Rack Towers, O'Shaughnessy Dam (facing page 95)

XII. Testing Machine, 1,250-Ton Universal for Bridge Members: Elevation and Plan; Elevation of Weighing End; Cross Sections (W. & T. Avery, Ltd.) (between pages 134 and 135)

XIII. Coal-Loading Plant at Port Talbot, for the Great Western Railway: General Arrangement; Details of Wagon Tipper and of Belt Conveyor (Spencer (Melksham), Ltd.) (between pages 162 and 163)

PLATE

XIV. Gear-Cutting Machine, Hobbing and End-Milling: Elevations and Plan; Section through Milling Head (Power Plant Co. Ltd.) (between pages 192 and 193)

XV. Engine, Steam, Compound-Tandem, Mine-Ventilating, for Modderfontein, South Africa: Elevation and Plan; End Elevation and Cross Section (Walker Brothers (Wigan), Ltd.) (between pages 226 and 227)

XVI. Pit-Head Frame, Reinforced-Concrete, Maurits Colliery, Limburg, Holland: Elevations, Plan, and Details of Reinforcement (N.V. Algemeene Beton Compagnie) (between pages 258 and 259)

XVII. Locomotive, 4-12-2 Type, Three-Cylinder, for Union Pacific Railroad: General View and Side Elevation (American Locomotive Co.) (between pages 290 and 291)

XVIII. Steamer "King George V," with High-Pressure Turbines: Rigging and Deck Plans (W. Denny & Brothers, Ltd.) (between pages 322 and 323)

XIX. Steamer "King George V;" with High-Pressure Turbines: Sections of Turbines and Gearing (Parsons Marine Steam Turbine Co., Ltd.) (between pages 322 and 323)

XX. Bridge, Reinforced-Concrete, over Thames between Reading and Caversham: Longitudinal Sections and Plan; Details of Reinforcement (L. G. Mouchel & Partners, Ltd.) (between pages 344 and 345)

XXI. Pulverised-Fuel Plant, Works of Messrs. Synthetic Ammonia & Nitrates, Ltd., Billingham-on-Tees: Sections of Boiler House; General Arrangement Diagram, and Details of Feed Mechanism (International Combustion, Ltd.) (between pages 380 and 381)

XXII. Locomotive, 4-12-2 Type, Three-Cylinder, for Union Pacific Railroad: Details of Cylinders and Valve Gear (American Locomotive Co.) (between pages 412 and 413)

XXIII. Magneto Works, British Thomson-Houston Co., Ltd., Coventry: Views of Material-Control Station; of Indicator Board; and of Aeroplane-Magneto Machine Shop (facing page 446)

XXIV. Magneto Works, British Thomson-Houston Co., Ltd., Coventry: Views of Tool Room and of Machine Shop (between pages 446 and 447)

XXV. Magneto Works, British Thomson-Houston Co., Ltd., Coventry: Views of Moulded-Insulation Department (between pages 446 and 447)

PLATE

XXVI. Magneto Works, British Thomson-Houston Co., Ltd., Coventry: Views of Armature-Winding Department; of Splitting Mica for Condenser Manufacture; of Aeroplane-Magneto Assembly Department; and of Testing-Rack for Aeroplane Magnetos (facing page 447)

XXVII. Turbine, Steam, 20,000-kw., Impulse-Reaction Type, Valley-road Power Station, Bradford: Views of Turbine as Erected at Power Station (English Electric Co., Ltd.) (facing page 464)

XXVIII. Turbine, Steam, 20,000-kw., Impulse-Reaction Type, Valley-road Power Station, Bradford: Longitudinal Section and Details of Casings (English Electric Co., Ltd.) (between pages 464 and 465)

XXIX. Turbine, Steam, 20,000-kw. Impulse-Reaction Type, Valley-road Power Station, Bradford: Views of Turbine in Course of Erection (English Electric Co., Ltd.) (facing page 465)

XXX. Motor Car Exhibition, Olympia: 18-50 h.p. Bean Car; Sections of Engine; Details of Front and Back Axles and Steering Gear (Bean Cars, Ltd.) (between pages 502 and 503).

XXXI. Motor Car Exhibition, Olympia: 11-65 h.p., Four-Cylinder, Sports Car, with Supercharged Engine; Views of Supercharger; of Transmission Gear; and of Engine (Riley, Coventry, Ltd.) (facing page 532)

XXXII. Motor Car Exhibition, Olympia: 50-150 h.p., Twelve-Cylinder Daimler Car; Sections of Engine; of Gear Box; and of Back and Front Axles (Daimler Co., Ltd.) (between pages 532 and 533)

XXXIII. Motor Car Exhibition, Olympia: 14-45 h.p. Six-Cylinder Clement-Talbot Car; Views of Chassis. 16-h.p. Lancia-Lambda Car; Views of Chassis (Curtis Automobile Co., Ltd.) (facing page 533)

XXXIV. Landing Stage and Floating Roadway, Seacombe Ferry, River Mersey: Views of Floating Stage during Construction and of North Boom being placed in Position (facing page 558)

XXXV. Landing Stage and Floating Roadway, Seacombe Ferry, River Mersey: Plans and Elevation of Landing Stage; Details of Floating Roadway (between pages 558 and 559)

XXXVI. Landing Stage and Floating Roadway, Seacombe Ferry, River Mersey: Views of Cut for Floating Roadway during Construction; of Half-Tide Dam for Pontoon Sill; of New Stage being moved into Position; and of Floating Roadway (facing page 559)

PLATE

XXXVII. Coal-Handling Plant, Gas Light & Coke Company's Beckton Works: Views of No. 1 Pier and Coal Storage Bunker (Fraser & Chalmers Engineering Works) (facing page 588)

XXXVIII. Coal-Handling Plant, Gas Light & Coke Company's Beckton Works: Elevations and Plans of No. 1 Pier and Conveyors (Fraser & Chalmers Engineering Works) (facing page 589)

XXXIX. Caissons for Canadian Government Dry Dock, Esquimalt, B.C.: Elevation, Longitudinal Section and Cross Sections (Yarrows, Ltd.) (facing page 592)

XL. Caissons for Canadian Government Dry Dock, Esquimalt, B.C.: Views of Caisson before Launching; of the Launch of a Caisson; of Caisson at Dry Dock before being put into Position; and of Caisson in Place (Yarrows, Ltd.) (facing page 593)

XLI. Engine, Oil, Diesel, 600-b.h.p. Four-Stroke: Side and End Elevations and Plan; Longitudinal and Transverse Sections; Details of Compressor (Bellis & Morcom, Ltd.) (between pages 626 and 627)

XLII. Coal-Handling Plant, Gas Light & Coke Company's Beckton Works: General Arrangement and Details of Conveyors (Fraser & Chalmers Engineering Works) (between pages 652 and 653)

XLIII. Hetch-Hetchy Water Supply, San Francisco Bay Crossing; Map and Plan of Bay; Details of Thrust Pier and Bridge Piers; Details of Trusses (between pages 682 and 683)

XLIV. Woodeson Boiler Equipped for Use with Pulverised Smokeless Fuel: Elevation and Plan of Plant; Details of Pulverisers (Clarke, Chapman & Co., Ltd.) (between pages 720 and 721)

XLV. Power Plant, Hydro-Electric, Isle Maligne, Saguenay River, Quebec: General View of Power House and Tailrace; Views of Power House and Spillway; of Spillway at Power House; and of No. 4 Spillway during Construction (between pages 748 and 749)

XLVI. Sleeping Car for the International Sleeping Car Co., Ltd.: Elevation, Plan and Sections of Underframe; Details of End Castings and of Bogie Frames (Birmingham Railway Carriage & Wagon Co., Ltd.) (between pages 784 and 785)

XLVII. Bridge, Suspension, Bear Mountain, Hudson River: Views of Cable Construction Operations (between pages 804 and 805)

LETTERS TO THE EDITOR.

(Illustrated Subjects are Marked with an Asterisk after the Number of the Page.)

ACTIVATED-Sludge Process, Sewage Purification. A. J. Martin, 115
Age Hardening of Y. Alloy. S. D. Heron, for the Wright Aeronautical Corporation, 731
Agriculture, Applications of Engineering to. W. W. Beaumont, 12
Alloy, Y, Age Hardening of. S. D. Heron, for the Wright Aeronautical Corporation, 731
Alternating Stresses, Fatigue Limit and Ultimate Strength. J. M. Lessells, 427
Aluminium, Y Alloy, Age Hardening of. S. D. Heron, for the Wright Aeronautical Corporation, 731
Ammonia, Synthetic Manufacture, Introduction of Haber Process. H. W. Dickinson, 443
Annular Pipes, Water Flow in. See *Pipes*
Apples, Refrigerated Transport of. F. A. Willcox, 303
Appointments, Engineering, and the Institution of Civil Engineers. Sapper (1914–19), 545; E. C. Barton, 579
Atmosphere, Heaviside Layer, Function in Wireless Telegraphy. See *Telegraphy*
Autographic Extensometer, Mechanical, Sheffield University. See *Extensometer*

BALLAST Water, Oil Separators for. See *Separators*
Bilge Water, Oil Separators for. See *Separators*
Billingham Synthetic Ammonia Plant, Introduction of Haber Process. H. W. Dickinson, 443
Boiler Feed-Water Heating, Design of High-Speed Economisers. See *Economisers*
Boxer Indemnity, Use of British Share for Education. G. W. Cockburn, 209
Bridge, London, Proposed, Design of, Suggested Competition. C. S. Gray, 825
British Engineering Standards Association, Glossary of Electrical Terms, Criticism of. J. Satterly, 395; C. L. Fortescue, 395
British Navy, Status of Engineer Officers. See *Naval Engineers*

CANALS, Hydraulic Phenomena of Movable Weirs. See *Weirs*
Carbonisation, Coal, in Continuous-Vertical Retorts. See *Retorts*
Carbonisation, Coal, Low and High-Temperature Processes. See *Coal*
Casting, Centrifugal Process, Production of Worm-Gear Blanks. C. J. Fitzpatrick, 395; E. Gregory, 443
Centrifugal Casting Process. Production of Worm-Gear Blanks. C. J. Fitzpatrick, 395; E. Gregory, 443
Chemistry, Synthetic Ammonia Manufacture, Introduction of Haber Process. H. W. Dickinson, 443
China, Boxer Indemnity, Use of British Share for Education. G. W. Cockburn, 209
Civil Engineers, Institution of, and Engineering Appointments. Sapper (1914–19), 545; E. C. Barton, 579
Coal Carbonisation in Continuous-Vertical Retorts. See *Retorts*
Coal, Low and High-Temperature Carbonisation, Smokeless Fuel Production. W. E Davies, 241; W. W. Strafford, 271
Continuous Vertical Retorts, Coal Carbonisation in. See *Retorts*
Corrugated Pipes, Water Flow in. See *Pipes*

DISCS, Rotating, Stresses in Rims of. A. H. D. M., 12

ECONOMISERS, High-Speed, Design of. R. Royds, 672, 701; B. M. Thornton, 672
Education, Engineering Lectures, Science Museum, South Kensington. J. L. Bruton, 731
Education, Uses of Boxer Indemnity for. G. W. Cockburn, 209
Electric Power, Production from House Refuse. See *Refuse Disposal*
Electric Power Production from Tides. See *Tidal Power*
Electrical Engineering Industry, British, Position of. M. R. Meldrum, 599
Electrical Terms, Standard Glossary, Criticism of. J. Satterly, 395; C. L. Fortescue, 395
Engineering, Applications to Agriculture. W. W. Beaumont, 12
Engineering Appointments and the Institution of Civil Engineers. Sapper (1914–19), 545; E. C. Barton, 579
Engineering Lectures, Science Museum, South Kensington. J. L. Bruton, 731
Engineering Standards Association, Glossary of Electrical Terms, Criticism of. J. Satterly, 395; C. L. Fortescue, 395
Engineers, Civil, Institution of, and Engineering Appointments. Sapper (1914–19), 545; E. C. Barton, 579
Engineers, Mechanical, Institution of, Suggested Improvements. A. P. Bale, 825
Engineers, Naval, Loss of Status. See *Naval Engineers*
Engines, Internal-Combustion, Ignition Point of Gases. H. B. Dixon, 12
Estuaries, River, Sites for Tidal Power Production. See *Tidal Power*
Extensometer, Mechanical, Autographic, Sheffield University, Design of Knife Edges. C. C. Mason, for the Cambridge Instrument Co., Ltd., 599

FATIGUE Limit and Ultimate Strength of Materials, J. M. Lessells, 427
Feed-Water Heating, Design of High-Speed Economisers. See *Economisers*
Foundry Work, Centrifugal Casting Process, Production of Worm-Gear Blanks. C. J. Fitzpatrick, 395; E. Gregory, 443
Friction, Water Flow in Pipes. See *Pipes*
Fuel, Smokeless, Low and High-Temperature Carbonisation Processes. See *Coal*

GAS Manufacture, Coal Carbonisation in Vertical Retorts. See *Retorts*
Gases, Ignition Point. H. B. Dixon, 12
Gases, Kinetic Theory of, and Molecular Aggregation. H. Chatley, 701
Gears, Worm, Centrifugal Casting Process for Blanks. C. J. Fitzpatrick, 395; E. Gregory, 443
Glossary of Electrical Terms, Criticism of. J. Satterly, 395; C. L. Fortescue, 395

HABER Process, Synthetic Ammonia Manufacture, Introduction of. H. W. Dickinson, 443
Hardening, Age, of Y Alloy. S. D. Heron, for the Wright Aeronautical Corporation, 731
Heat Transmission in Economisers. See *Economisers*
Heating, Feed-Water, Design of High-Speed Economisers. See *Economisers*
Heaviside Layer, Function in Wireless Telegraphy. See *Telegraphy*
H.M. Navy, Status of Engineer Officers. See *Naval Engineers*
Holes in Steel Plates, Stresses near. G. F. Swain, 240
House-Refuse Disposal and Electric Power Production. See *Refuse Disposal*
Hydraulic Phenomena of Movable Weirs. See *Weirs*
Hydraulics, Screw-Viscosity Pumps, Theory of. H. S. Rowell, 825
Hydraulics, Water Flow in Pipes. See *Pipes*

IGNITION Point of Gases. H. B. Dixon, 12
Industry, Electrical-Engineering, British, Position of. M. R. Meldrum, 599
Institution of Civil Engineers and Engineering Appointments. Sapper (1914–19), 545; E. C. Barton, 579
Institution of Mechanical Engineers, Suggested Improvements. A. P. Bale, 825
Internal-Combustion Engines. See *Engines*

JUBILEE of the Telephone, Sir O. Lodge, 54

KINETIC Theory of Gases and Molecular Aggregation. H. Chatley, 701
Knife Edges, Mechanical Autographic Extensometer, Design of. See *Extensometer*

LECTURES, Engineering, Science Museum, South Kensington. J. L. Bruton, 731
London Bridges, Proposed Design of, Suggested Competition. C. S. Gray, 825
Low-Temperature Carbonisation. See *Coal*

MATERIALS, Strength of, Fatigue Limit, Elastic Limit and Ultimate Strength. J. M. Lessells, 427
Materials, Strength of, Stresses near Holes in Steel Plates. G. F. Swain, 240
Mechanical Autographical Extensometer, Sheffield University. See *Extensometer*
Mechanical Engineers, Institution of, Suggested Improvements. A. P. Bale, 825
Metallurgy, Age-Hardening of Y Alloy. S. D. Heron, for the Wright Aeronautical Corporation, 731
Museum, Science, South Kensington, Engineering Lectures. J. L. Bruton, 731

NAVAL Engineers, Status of. G. H. Turrall, 132
Nitrogen Fixation, Introduction of Haber Process. H. W. Dickinson, 443

OIL Separators, Bilge and Ballast Water. See *Separators*

PHYSICS, Kinetic Theory of Gases and Molecular Aggregation. H. Chatley, 701
Pipes, Annular, Frictional Resistance of. E. J. Cornish, 168. See *Erratum*, 292; O. A. Price, 303; H. S. Rowell, 352
Pipes, Corrugated, Resistance to Water Flow, A. B. Cox, 115; A. R. Low, 115
Plates, Steel, Stresses near Holes. G. F. Swain, 240
Power, Electric, Production from House Refuse. See *Refuse Disposal*
Power, Electric, Production from Tides. See *Tidal Power*
Pumps, Screw Viscosity, Theory of. H. S. Rowell, 825

REFRIGERATED Transport of Apples. F. A. Willcox, 303
Refuse Disposal and Electric Power Production. C. N. Russell, 115
Resistance, Water Flow in Pipes. See *Pipes*
Retorts, Vertical, Continuous, Coal Carbonisation in. W. E. Davies, 72, 133. See 241, 271
Rims of Rotating Discs, Stresses in. A. H. D. M., 12
River Estuaries. Sites for Tidal Power Production. See *Tidal Power*
Rivers, Hydraulic Phenomena of Movable Weirs. See *Weirs*
Rotating Discs, Stresses in Rims of. A. H. D. M., 12

SANITATION, Activated-Sludge Process, Sewage Purification. A. J. Martin, 115
Sanitation, House-Refuse Disposal and Electric Power Production. See *Refuse Disposal*
Science Museum, South Kensington, Engineering Lectures. J. L. Bruton, 731
Screw Viscosity Pumps, Theory of. H. S. Rowell, 825
Separators, Oil, for Bilge and Ballast Water. W. R. Chadburn, for Chadburn's (Ship) Telegraph Co., Ltd., 72; A. Beale, 132, 209; R. C. Knight, 133; H. Ogden, 133, 241
Severn Tidal Power Scheme, Alternative Sites. See *Tidal Power*
Sewage Purification, Activated-Sludge Process. A. J. Martin, 115
Sheffield University, Mechanical Autographic Extensometer. See *Extensometer*
Shipping, Refrigerated Transport of Apples. F. A. Willcox, 303
Sludge, Activated. See *Sewage Purification*
Smokeless Fuel, Low and High-Temperature Carbonisation Processes. See *Coal*
South Kensington, Science Museum, Engineering Lectures. J. L. Bruton, 731
Standard Glossary of Electrical Terms, Criticism of. J. Satterly, 395; C. L. Fortescue, 395
Status of Naval Engineers. See *Naval Engineers*
Steam Turbines. See *Turbines*
Steel Plates, Stresses near Holes. G. F. Swain, 240
Strength of Materials, Fatigue Limit, Elastic Limit and Ultimate Strength. J. M. Lessells, 427
Strength of Materials, Stresses near Holes in Steel Plates. G. F. Swain, 240
Stresses near Holes in Steel Plates. G. F. Swain, 240
Stresses in Materials, Fatigue Limit, Elastic Limit and Ultimate Strength. J. M. Lessells, 427
Stresses in Rims of Rotating Discs. A. H. D. M., 12
Synthetic Ammonia Manufacture, Introduction of Haber Process. H. W. Dickinson, 443

TELEGRAPHY, Wireless, Function of Heaviside Layer. F. W. Lanchester, 443*; G. W. O. Howe, 487
Telephone, Jubilee of. Sir O. Lodge, 54
Testing Machines, Mechanical Autographic Extensometer for. See *Extensometer*
Thames Bridges, London, Proposed, Design of, Suggested Competition. C. S. Gray, 825
Thermodynamics, Kinetic Theory of Gases and Molecular Aggregation. H. Chatley, 701
Tidal Power Schemes, Sites for. S. O'D., 579, 641; A. Oates, 599, 672; J. D. Morrison, 641
Town-Refuse Disposal and Electric Power Production. See *Refuse Disposal*
Transport, Refrigerated, of Apples. F. A. Willcox, 303
Turbines, Steam, Stresses in Rims of Rotating Discs. A. H. D. M., 12

UNIVERSITY of Sheffield, Mechanical Autographic Extensometer. See *Extensometer*

VERTICAL Retorts, Coal Carbonisation in. See *Retorts*
Viscosity Pumps, Screw, Theory of. H. S. Rowell, 825

WATER, Bilge and Ballast, Oil Separators for. See *Separators*
Water Flow in Pipes. See *Pipes*
Weirs, Movable, Hydraulic Phenomena. A. P. Flockart, 54*, 701
Wireless Telegraphy. See *Telegraphy*
Worm-Gear Blanks, Centrifugal Casting Process. C. J. Fitzpatrick, 395; E. Gregory, 443

Y ALLOY, Age-Hardening of. S. D. Heron, for the Wright Aeronautical Corporation, 731

LITERATURE.

ABRASIVES, Grinding and Polishing Machines by A. Giordano, 261
Abrasivi, Affilatrici, Rettificatrici, by A. Giordano, 261
Accidents, Prevention of, 372
Advertisement Directory, Standard, 357
Aerial Surveying, by A. L. Higgins, 517
Aeronautics, All the World's Aircraft, by C. G. Grey and L. Bridgman, 659
Air Fleets, Pocket Book of, by Dr. Ing. W von Langsdorff, 240
Air Resistance of Express Trains, by C. F. D. Marshall, 777
Aircraft and Aircraft Motors, German, Edited by C. W. E. Meyer, 72
Aircraft, All the World's, by C. G. Grey and L. Bridgman, 659
Alloy Steels. See *Steels*
Almanack, Whitaker's, 795
Almanacs and Calendars, 795
Alternating Currents, Theory and Practice, by A. T. Dover, 426
Aluminium and Bauxite, by W. G. Rumbold, 16
Aluminium Foundry Work, 478
Annual, Naval and Shipping, Brassey's, 1927, 810
Annuals and Year Books. 795, 823
Apparatus, Electrical, by P. Maurer, 439
Appareillage Electrique, by P. Maurer, 439
Applied Chemistry. See *Chemistry*
Atom, Quantum Theory of, by G. Birtwistle, 261
Atomicity and Quanta, by Dr. J. H. Jeans, 71
Aviation Year Book, German, by Dr. Ing. W. von Langsdorff, 270

BATS, Mosquitoes and Dollars, by Dr. C. A. R. Campbell, 144
Battleships in Action, by H. W. Wilson, 561
Bauxite and Aluminium, by W. G. Rumbold, 16
B.E.A.M.A. Book, 304
Belgian Metallurgical Guide, 609
Berwick-on-Tweed District, Geology of, by A. Fowler, 16
Bibliography on Research, 228
Books, New, Notes on, 16, 71, 260, 415, 472, 517, 659, 687, 720
Books Received, 14, 76, 106, 136, 168, 200, 232, 264, 296, 326, 356, 386, 418, 448, 478, 508, 538, 570, 600, 632, 662, 724, 756, 786, 816
Books, Scientific and Technical, Catalogue, 677
Brass Founders' and Finishers' Manual, by P. Gale, 687
Brassey's Naval and Shipping Annual, 1927, 810
Bricks, Cement and Concrete, by A. B. Searle, 415
Bridges, Ferro-Concrete, Italian, by L. Santarello and E. Moizzi, 438
Bridges, Steel, Weights, by W. H. Thorpe, 415
British Electrical and Allied Manufacturers' Association, B.E.A.M.A. Book, 304
British Navy in Adversity, by Capt. W. M. James, 655
Building Construction, Cement, Concrete and Bricks, by A. B. Searle, 415
Building Educator, Pitman's, 578
Building Mechanics, by W. G. Sheppard, 176
Building Research Station, 509
Bulk Cargoes, by A. C. Hardy, 526

CALENDARS and Almanacs, 795
Cardiff Commerce and Industries, 356
Cargoes, Bulk, by A. C. Hardy, 526
Cast Iron, Metallurgy of, by J. E. Hurst, 656
Cement, Concrete and Bricks, by A. B. Searle, 415
Cement, Portland, Making and Testing, 415
Cerium, Molybdenum and Related Alloy Steels, by H. W. Gillett and G. L. Mack, 98
Chemical Composition and Crystalline Form, by Dr. A. E. H. Tutton, 98
Chemical Industry, Society of, Annual Reports on Progress of Applied Chemistry, 517
Chemistry, Annual Tables of Constants and Data, Vol. V., Part I, 472
Chemistry, Applied, Progress of, Annual Reports on, 517
Chemistry, Glycerol Manufacture, by Dr. G. Martin, 438
Chemistry, International Critical Tables, Vol. I. Edited by Prof. E. W. Washburn, 472
China Year Book, 721
Coalfield, Lancashire, King Seam, 517
Colliery Working, Use of Power in, by J. Kirsopp, 811
Concrete, Cement and Bricks, by A. B. Searle, 415
Concrete Making and Testing, 415
Condutture, Apparecchi, Misuratori di Acqua Potabile; Manutenzione e Manovre, by E. Ghiraldini, 270
Conference, Dominion Mining, 1926, Proceedings, Papers, Remits and Discussions, 720
Contracting, Electrical, by H. A. Purdie, 517
Contractors, Directory of, and Public Works Annual, 201
Copper Tubes, Use for Central Heating, 387
Cornwall Works, Birmingham, History, 265
Costing, Dictionary of, by J. H. Ryall, 270
Crystalline Form and Chemical Composition, by Dr. A. E. H. Tutton, 98
Cutting, Metal, by Oxygen, Hints on, 788

DEUTSCHE Kraftfahrzeug-Typenschau. I. Luftfahrzeuge und Luftfahrzeugmotoren. Edited by C. W. E. Meyer, 72
Diaries and Pocket Books, 795, 823
Diary, Ronco Indexed, 795
Dictionary of Costing, by J. H. Ryall, 270
Dictionary of Weaving Terms, Edited by A. Schlomann, 72
Diesel Engines. See *Engines*
Directory, Advertisement, Standard, 357
Directory of Contractors and Public Works Annual, 201
Directory, Engineers, Iron, Metal and Motor Trades, Kelly's, 687
Directory, Merchants, Manufacturers, and Shippers, Kelly's, 357
Directory, Paper Trade, Phillip's, 831
Directory of Railway Officials, 136
Dominion Mining Conference, 1926, Proceedings, Papers, Remits and Discussions, 720
Drawing, Engineering, Geometry of, by Prof. G. J. Hood, 687
Drawing, Modern Technical, by G. Ellis, 415

ECONOMICS, Wealth, Virtual Wealth and Debt, by F. Soddy, 700
Education, The Whitworth Book, 778
Educator, Building, Pitman's, 578
Educator, Engineering, Pitman's, 517
Electric, Alternating Currents, Theory and Practice, by A. T. Dover, 426
Electric Circuits and Installation Diagrams, by W. S. Ibbetson, 143
Electric Induction Motor, Notes on, H. E. Dance, 260
Electric Power Transmission and Distribution, Principles, by L. F. Woodruff, 98
Electrical Apparatus, by P. Maurer, 439
Electrical Contracting, by H. A. Purdie, 517
Electrical Contractor's Year-Book, 456
Electrical Equipment of Motor Cars, by Dr.-Ing. E. Seiler, 778
Electrical Pocket Book and Diary, "Practical Engineer," 795
Electrical Undertakings, Garcke's Manual, 823
Electrically Refining Metals, by L. J. Barton, 700
"Electrician" Table of Electricity Undertakings, 356
Electricity, Light and Sound, Marvels of, by P. G. Ball, 261
Electrotechnics, Practical, by P. G. Lanino, 415
Elektrische Zündung, Licht und Anlasser der Kraftfahrzeuge, by Dr. Ing. E. Seiler, 778
Elettrotechnica Practica, by P. G. Lanino, 415
Empire Markets, New Zealand, 62
Encyclopedia of Modern Engineering, Italian Translation of "Hütte, Vol. I.," by C. Rossi, 415
Engineering Drawing, Geometry of, by Prof. G. J. Hood, 687
Engineering Educator, Pitman's, 517
Engineering Index, 175
Engineering, Modern, Encyclopedia of, Italian Translation of "Hütte, Vol. I." by C. Rossi, 415
Engineering Production, Economic, Workshop Operations and Layouts for, by P. Gates 517
Engineers, Iron, Metal and Motor Trades, Kelly's Directory, 687
Engineers and the Prevention of Malaria, by H. Home, 239
Engines, Internal-Combustion, High Output by H. R. Ricardo, 438
Engines, Oil, Diesel, Marine, Practical Treatise, by L. R. Ford, 261
Engines, Oil, Diesel, Marine, Verbal Notes and Sketches, by J. W. M. Sothern, 261
Evaporation and Heat Transfer, by Prof. W. L. Badger, 415

FAN Ventilation in a Weaving Shed, Report, 484
Faraday House Journal, 214
Ferro-Concrete Bridges, Italian, by L. Santarella and E. Moizzi, 438
Finance, Wealth, Virtual Wealth and Debt, by F. Soddy, 700
Fortschritte der Luftfahrt, Jahrbuch, 1926, by Dr. Ing. W. von Langsdorff, 270
Foundry Practice, Moulding and Melting, by C. Derulle, 721
Foundry Practice, by R. H. Palmer, 687
Foundry Work, Aluminium, 478
Foundry Work, Brass Founders' and Finishers' Manual, by P. Gale, 687
Fourier's Theorem and Harmonic Analysis, by A. Eagle, 472

GARCKE'S Manual, Electrical Undertakings, 823
Gas Engineer's Pocket Book, 472. See *Erratum*, 548
Gas Welding, Hints on, 788
Geology of Berwick-on-Tweed, Norham and Scremerston, by A. Fowler, 16
Geometry of Engineering Drawing, by Prof. G. J. Hood, 687
German Aircraft and Aircraft Motors. Edited by C. W. E. Meyer, 72
German Aviation Pocket Book, by Dr.-Ing. W. von Langsdorff, 240
German Aviation Year-Book, by Dr.-Ing W. von Langsdorff, 270
Glycerol Manufacture, by Dr. G. Martin, 438
Grinding and Polishing Machines, by A. Giordano, 261
Guernsey Telephone System, History, by A. R. Bennett, 687

HANDBOOK, South American, 823
Handbuch der Eisenhüttenkunde, by A. Ledebur, 810
Harmonic Analysis and Fourier's Theorem, by A. Eagle, 472
Heat Transfer and Evaporation, by Prof. W. L. Badger, 415
Heating, Central, Use of Copper Tubes, 387
Hydraulics, by J. N. le Conte, 701

ILLUMINATION, Photometry, by J. W. T. Walsh, 625
Income Tax Charts and Handbook, 296
Index, Engineering, 175
Induction Motor, Notes on, H. E. Dance, 260
Industrial Administration, Introduction to, by J. Lee, 426
Industrial Economics, Wealth, Virtual Wealth and Debt, by F. Soddy, 700
Industries, Trade, Products and Resources of South Africa, by C. W. F. Harrison, 687
Information Bureaux and Libraries, Association, 201, 334
Installation Diagrams and Electric Circuits, by W. S. Ibbotson, 143
Insurance, Unemployment, Guide to, by H. C. Emmerson and E. C. P. Lascelles, 625
Internal-Combustion Engines. See *Engines*
International Critical Tables, Vol. I, Edited by Prof. E. W. Washburn, 472
Iron, Cast, Metallurgy of, by J. E. Hurst, 656
Iron, Metal and Motor Trades, Kelly's Directory, 687
Iron and Steel, Stainless, by J. H. G. Monypenny, 142
Iron Works Practice, German Treatise, by A. Ledebur, 810
Italian Ferro-Concrete Bridges, by L. Santarella and E. Moizzi, 438

KELLY'S Directory, Engineers, Iron, Metal and Motor Trades, 687
Kelly's Directory of Merchants, Manufacturers and Shippers, 357
King Seam, Lancashire Coalfield, 517
King's College Engineering Society, Journal, 60

LABOUR, Law Relating to Injuries to Workmen, by F. G. Neave, 687
Labour, Unemployment Insurance Acts, Guide to, by H. C. Emmerson and E. C. P. Lascelles, 625
Lancashire Coalfield, King Seam, 517
Law Relating to Injuries to Workmen, by F. G. Neave, 687
Leeds, Industries of, 265
Legal, Law Relating to Injuries, to Workmen, by F. G. Neave, 687
Legal, Unemployment Insurance Acts, Guide to, by H. C. Emmerson and E. C. P. Lascelles, 625
Lehrbuch der Bergwerksmaschinen (Kraft und Arbeitsmaschinen), by Dr. H. Hoffmann, 527
Libraries and Information Bureaux Association, 201, 334
Light, Electricity and Sound, Marvels of, by P. G. Bull, 261
Lloyd's Register of Shipping, Register Book, 248
Locks and Lockmaking, by F. J. Butter, 720
Lubrication, Gargoyle Technical Series, 297
Lubrication, Power Plant, by W. F. Osborne, 239. See *Erratum*, 354

MACCHINE Utensili per la Cavorazione dei Materiali Metallici, by A. Ciniselli, 472
Machine Tools for Metal Working, by A. Ciniselli, 472
Maharajah's College Journal, 252
Mains, Water, Installation and Maintenance, Italian Treatise on, by E. Ghiraldini, 270
Malaria, Prevention of, Bats, Mosquitoes and Dollars, by Dr. C. A. R. Campbell, 144
Malaria, Prevention of, and the Engineer, by H. Home, 239
Manchester College of Technology Journal, 494
Manuale Enciclopedico della Ingegneria Moderna, Translated from the German by C. Rossi, 415
Manufacturers, Kelly's Directory, 357
Marine Diesel Engineering, Practical, by L. R. Ford, 261
Marine Diesel Oil Engines, Verbal Notes and Sketches, by J. W. M. Sothern, 261
Materials, Testing, by I. H. Cowdrey and R. C. Adams, 71
Mathematics, Fourier's Theorem and Harmonic Analysis, by A. Eagle, 472
Mathematics, Higher, for Students of Engineering and Science, by F. G. W. Brown, 659
Mechanical Pocket Book and Diary, "Practical Engineer," 823
"Mechanical World" Year Book, 795
Mechanics of Building Construction, by W. G. Sheppard, 176
Merchants, Kelly's Directory, 357
Metal Cutting, Oxygen, Hints on, 788
Metal Spraying, by T. H. Turner and N. F. Budgen, 625
Metal Working, Machine Tools for, by A. Ciniselli, 472
Metallurgical Guide, Belgian, 609
Metallurgy, Aluminium Foundry Work, 478
Metallurgy, Bibliography of Zinc Retorts, 464
Metallurgy, Brass Founders' and Finishers' Manual, by P. Gale, 687
Metallurgy of Cast Iron, by J. E. Hurst, 656
Metallurgy, Foundry Practice, by R. H. Palmer, 687
Metallurgy, Iron and Steel Works Practice, German Treatise, by A. Ledebur, 810
Metallurgy, Metal Spraying, by T. H. Turner and N. F. Budgen, 625
Metallurgy, Molybdenum, Cerium and Related Alloy Steels, by H. W. Gillett and G. L. Mack, 98
Metallurgy, Refining Metals Electrically, by L. J. Barton, 700
Metallurgy, Stainless Iron and Steel, by J. H. G. Monypenny, 142
Metallurgy, Staybrite Steel, Development, Properties and Uses, 659
Metallurgy, Tungsten and its Applications, by Dr. C. J. Smithells, 625
Metals, Refining Electrically, by L. J. Barton, 700
Meters, Water, Installation and Maintenance, Italian Treatise on, by E. Ghiraldini, 270
Mining Conference, Dominion, 1926, Proceedings, Papers, Remits and Discussions, 720
Mining Machinery, German Text-Book, by Dr. H. Hoffmann, 527
Molybdenum, Cerium and Related Alloy Steels, by H. W. Gillett and G. L. Mack, 98
Motor-Cars, Electrical Equipment of, by Dr. Ing. E. Seiler, 778
Motor, Induction, Notes on, H. E. Dance, 260
Motor Trades, Kelly's Directory, 687,
Motorship Year-Book, 823
Moulding, Foundry, by C. Derulle, 721

NAVAL Annual, Brassey's, 1927, 810
Naval Warfare, Battleships in Action, by H. W. Wilson, 561
Navy, British, in Adversity, by Capt. W. M. James, 655
New Zealand, Empire Markets, 62

New Zealand Railways Magazine, 201
Newport, Industrial Position of, 591
Northumberland, Northern, Geology of, by A. Fowler, 16

OFFICIAL Statistics, Guide to, 265
Oil Engines. See *Engines*
Oil, Petroleum, Development and Technology, 1925, 527
Oxygen Metal Cutting, Hints on, 788

PAPER, Sizing of, Sodium Silicate for, by C. F. Cross, 517
Paper Trade Directory, Phillip's, 831
Petroleum Development and Technology in 1925, 527
Photometry, by J. W. T. Walsh, 625
Photo-Topography, by A. L. Higgins, 517
Physics, Annual Tables of Constants and Data, Vol. V., Part I, 472
Physics, Atomicity and Quanta, by Dr. J. H. Jeans, 71
Physics, International Critical Tables, Vol. I, Edited by Prof. E. W. Washburn, 472
Physics, Quantum Theory of the Atom, by G. Birtwistle, 261
Physics, Sound, Light and Electricity, Marvels of, by P. G. Bull, 261
Physik und Technik des Hochvakuums, by Dr. A. Goetz, 659
Pipes, Water, Installation and Maintenance, Italian Treatise on, by E. Ghiraldini, 270
Pitman's Building Educator, 578
Pitman's Engineering Educator, 517
Pocket Book of Air Fleets, by Dr. Ing. W. von Langsdorff, 240
Pocket Books and Diaries, 795, 823
Pocket Book, Electrical, "Practical Engineer," 795
Pocket Book, Gas Engineer's, 472. See *Erratum*, 548
Pocket Book, Mechanical, "Practical Engineer," 823
Polishing and Grinding Machines, by A. Giordana, 261
Ponti Italiani in Cemento Armato, by L. Santarella and E. Moizzi, 438
Portland Cement. See *Cement*
Power, Electric, Transmission and Distribution, Principles, by L. F. Woodruff, 98
Power Plant Lubrication, by W. F. Osborne, 239. See *Erratum*, 354
Power, Use in Colliery Working, by J. Kirsopp, 811
"Practical Engineer" Electrical Pocket Book and Diary, 795; Mechanical Pocket Book and Diary, 823
Public Works Annual, 201
Pumps, High-Vacua, Physics and Technics by Dr. A. Goetz, 659

QUANTA and Atomicity, by Dr. J. H. Jeans, 71
Quantum Theory of the Atom, by G. Birtwistle, 261

RAILWAYS, New Zealand, Magazine, 201
Railway Officials, Universal Directory, 136
Railway, Southern, Resignalling, 825
Railway Trains, Express, Resistance of, by C. F. D. Marshall, 777
Refining Metals Electrically, by L. J. Barton, 700
Reinforced Concrete. See *Ferro-Concrete*
Research, Bibliography on, 228
Research Station, Building, 509
Resistance of Express Trains, by C. F. D. Marshall, 777
Roneo Indexed Diary, 795
Rope Driving, 231
Royal Sanitary Institute, Jubilee Retrospect, 472

SANDS, Clays and Economic Minerals, 508
Sanitary Institute, Royal, Jubilee Retrospect, 472
Sanitation, Prevention of Malaria and the Engineer, by H. Home, 239
Scientific and Technical Books, Catalogue, 677
Shipbuilding, From Slip to Sea, by A. G. Hardy, 721
Shippers, Kelly's Directory, 357
Shipping Annual, Brassey's, 1927, 810
Shipping, Bulk Cargoes, by A. C. Hardy, 526
Shipping, Lloyd's Register, Register Book, 248
Shipping, Tonnage Measurement, Historical and Critical Essays, by A. Van Driel, 38
Ships, Tonnage Measurement, Historical and Critical Essay, by A. Van Driel, 38
Signalling Work, Southern Railway, 825
Slip to Sea, by A. G. Hardy, 721
Smoke Problem of Great Cities, by Sir N. Shaw and Dr. J. S. Owens, 71
Soap and Detergent Industry, Including Manufacture of Glycerol, by Dr. G. Martin, 438
Society of Chemical Industry, Reports on Progress of Applied Chemistry, 517
Sodium Silicate, Use for Paper Sizing, by C. F. Cross, 517
Sound, Light and Electricity, Marvels of, by P. G. Bull, 261
South Africa, Trade, Industries, Products and Resources, by C. W. F. Harrison, 687
South American Handbook, 823
Southern Railway, Re-Signalling, 825
Spraying Metal, by T. H. Turner and N. F. Budgen, 625
Stainless Iron and Steel, by J. H. G. Monypenny, 142
Standard Advertisement Directory, 357
Staybrite Steel, Development, Properties and Uses, 659
Steam Turbines. See *Turbines*
Steamers, Tonnage Measurement, Historical and Critical Essay, by A. Van Driel, 38
Steel Bridge Weights, by W. H. Thorpe, 415
Steel and Iron, Stainless, by J. H. G. Monypenny, 142
Steel, Staybrite, Development, Properties and Uses, 659
Steel-Works Practice, German Treatise, by A. Ledebur, 810
Steels, Alloy, Molybdenum, Cerium and Related, by H. W. Gillett and G. L. Mack, 98
Steels for General Purposes, 263
Surveying, Photographic Methods, by A. L. Higgins, 517
Surveying, Topographical, Text Book, Edited by Col. Sir C. Close and Col. Winterbotham, 721
Swansea Exchange, Report, 137

TABLES Annuelles de Constantes et de Données Numériques de Chimie, Physique et Technologie, Vol. V, Part I, 472
Tangyes, Ltd., History of Cornwall Works, 265
Tanks, Pocket Book of, by F. Heigl, 72
Taschenbuch der Luftflotten, by Dr. Ing. W. von Langsdorff, 240
Taschenbuch der Tanks, by F. Heigl, 72
Technical Books, Catalogue, 677
Technik und Physik des Hochvakuums, by Dr. A. Goetz, 659
Telephone Communication Systems, by R. G. Koeffler, 176
Telephones, Guernsey System, History, by A. R. Bennett, 687
Testing Materials, Principles, by I. H. Cowdrey and R. C. Adams, 71
Textiles, Weaving and Woven Fabrics, Dictionary, Edited by A. Schlomann, 72
Tonnage Measurement, Historical and Critical Essay, by A. Van Driel, 38
Topographical Surveying, Text Book, Edited by Col. Sir C. Close and Col. Winterbotham, 721
Trade, Industries, Products and Resources of South Africa, by C. W. F. Harrison, 687
Trains, Railway, Express, Resistance of, by C. F. D. Marshall, 777
Transport, Marine, Bulk Cargoes, by A. C. Hardy, 526
Tubes, Copper, Use for Central Heating, 387
Tungsten, Metallurgy and Applications, by Dr. C. J. Smithells, 625
Turbines, Steam, by Prof. G. Belluzo, 261

UNEMPLOYMENT Insurance Acts, Guide to, by H. C. Emmerson, and E. C. P. Lascelles, 625

VACUUA, High, Physics and Technics, by Dr. A. Goetz, 659
Ventilation, Fan, Weaving Shed, Report, 484

WARFARE, Tanks, Pocket Book of, by F. Heigl, 72
Warships in Action, by H. W. Wilson, 561
Warships, Brassey's Naval and Shipping Annual, 1927, 810
Warships, British Navy in Adversity, by Capt. W. M. James, 655
Water Supply, Mains and Meters, Italian Treatise on, by E. Ghiraldini, 270
Water Supply of Wiltshire from Underground Sources, by W. Whitaker and F. H. Edmunds, 261
Waterworks Administration, by W. H. Parsons, 99
Wealth, Virtual Wealth and Debt; Solution of the Economical Paradox, by F. Soddy, 700
Weaving Shed, Fan Ventilation, Report, 484
Weaving and Woven Fabrics, Dictionary, Edited by A. Schlomann, 72
Weights of Steel Bridges, by W. H. Thorpe, 415
Welding, Gas, Hints on, 788
Whitaker's Almanack, 795
Whitworth Book, 778
Who's Who, 1927, 824
Wiltshire, Water Supply from Underground Sources, by W. Whitaker and F. H. Edmunds, 261
Workmen, Law Relating to Injuries, by F. G. Neave, 687
Works Management, Dictionary of Costing, by J. H. Ryall, 270
Works Management, Introduction to Industrial Administration, by J. Lee, 426
Workshop Operations and Layouts for Economic Production, by P. Gates, 517

YEAR BOOK, China, 721
Year Book, Electrical Contractors', 456
Year Book, German Aviation, by Dr. Ing. W. von Langsdorff, 270
Year Book, "Mechanical World," 795
Year Book, Motorship, 823
Years Books and Annuals, 795, 823

ZINC Retorts, Bibliography, 464

PATENT RECORD.

The Patent Index is classified under the following sub-titles :—AERONAUTICS; AGRICULTURAL APPLIANCES; ELECTRICAL APPARATUS; GAS ENGINES, PRODUCERS, HOLDERS, &c.; GUNS AND EXPLOSIVES; LIFTING AND HAULING APPLIANCES; MACHINE AND OTHER TOOLS, SHAFTING, &c.; MINING, METALLURGY AND METAL WORKING; MISCELLANEOUS; MOTOR ROAD VEHICLES; PUMPS; RAILWAYS AND TRAMWAYS; SHIPS AND NAUTICAL APPLIANCES; STEAM ENGINES, BOILERS, EVAPORATORS, &c.; AND TEXTILE MACHINERY.

SUBJECT MATTER.

Aeronautics :

Air Screws. Sir W. G. Armstrong, Whitworth Aircraft, Ltd., and F. Pratt, 618
Seaplans. T. M. Barlow and F. Duncanson, 30

Agricultural Appliances :

Flax, Harvesting, Machines for. S. Allingham and R. Boby, Ltd., 30

Electrical Apparatus :

Cables, Electric. British Insulated & Helsby Cables, Ltd., and G. H. Nisbett, 250
Cables, Electric. Callender's Cable & Construction Co., Ltd., and S. J. Bryce, 250
Cables, Electric, Metal-sheathed. British Insulated & Helsby Cables, Ltd., and J. L. Packer, 153
Circuit-Breakers, Automatic Electric. E. M. Johnson and Metropolitan-Vickers Electrical Co., Ltd., 30
Dynamo Electric Machinery. A. Parkinson and F. & A. Parkinson, Ltd., 153
Liquids, Apparatus for Measuring Level and Flow. G. F. Shotter, 153

Gas Engines, Producers, Holders, &c. :

Internal-Combustion Engines. W. Beardmore (Lord Invernairn) and A. E. L. Chorlton, 250
Internal-Combustion Engines. Douglas Motors, Ltd., and C. G. Pullin, 680
Internal-Combustion Engines. Fairfield Shipbuilding & Engineering Co., Ltd., and R. Traill, 680
Internal-Combustion Engines. John Marston, Ltd., and J. E. Greenwood, 524
Internal-Combustion Engines. John Robson (Shipley), Ltd., W. J. Hinde and E. H. Salmon, 588
Pistons. Douglas Motors, Ltd., and S. L. Bailey, 30
Pistons. A. E. Macdonald and Motor Pistons, Ltd., 588
Retorts, Vertical. F. J. and E. West and West's Gas Improvement Co., Ltd., 618
Shale, Distillation of. R. H. Crozier, 30
Valve Gear. Birmingham Small Arms Co., Ltd. H. Briggs and T. Richardson, 153*

Guns and Explosives :

Telescopes, Gun Sighting. Vickers, Ltd., P. W. Gray and E. W. Taylor, 833

Lifting and Hauling Appliances :

Buckets, Drag, for Excavating. W. Savage and Ruston & Hornsby, Ltd., 524
Hoisting Machinery. Clarke, Chapman & Co., Ltd., and W. A. Woodeson, 524
Pulley Blocks. Head, Wrightson & Co., Ltd., and H. Clark, 92
Ropeways, Aerial. G. A. Main, 588
Ropeways, Aerial. Ropeways, Ltd., and E. Roe, 250

Machine and Other Tools, Shafting, &c. :

Bearings, Ball or Roller. H. F. Marles, 153, 186
Bearings, Roller. J. T. Richardson, 833
Belts, Driving. D. Tood and R. & J. Dick, Ltd., 92
Clutches. C. K. Edwards and The Associated Equipment Co., Ltd., 404
Couplings, Flexible. Never-Stop Transit, Ltd., B. R. Adkins, and W. Y. Lewis, 404
Drilling Machines. Sir A. Herbert, P. V. Vernon and C. Wilson, 680
Gear Teeth, Cutting. David Brown & Sons (Huddersfield), Ltd., and P. Brown, 153
Gearing, Bevel. J. Pierce, 404
Gearing, Power Transmitting. E. C. Hatcher, 618
Hammers, Pneumatic. Pease & Partners, Ltd., and E. E. Cockersoll, 742
Work-Chucking Devices. Sir A. Herbert and A. H. Lloyd, 680

Mining, Metallurgy & Metal Working :

Coal-Cutting Machines. G. Rimmer and A. Y. Hoy, 404
Coal, Drying or Pre-heating. S. R. Illingworth and The Illingworth Carbonisation Co., Ltd., 92
Coal-Pulverising Machines. Sir A. Herbert and C. E. Blyth, 742
Corves, Colliery, Controlling. A. Hopkinson and B. W. Hewitt, 710
Drills, Rock. J. L. and A. T. Holman, 92, 588
Furnaces, Metallurgical. B. Talbot, 153

Mining, Metallurgy and Metal Working —*continued.*

Hollow Metal Articles, Casting. W. Haddon and J. A. Fullilove, 186
Metal Bodies, Moulding and Casting. A. G. and H. N. Downing, 742
Muffles or Furnaces. J. H. Lloyd, C. M. Walter and J. Palser, 92
Pipes, Metal, Casting. Stanton Ironworks Co., Ltd., and J. Lander, 710
Springs, Laminated. Cocker Brothers, Ltd., and F. M. Moody, 588

Miscellaneous :

Filtering Apparatus. J. M. Phillips, 834
Ventilating Apparatus. J. W. Kempster and Harland & Wolff, Ltd., 30

Motor Road Vehicles :

Axle Suspension. Alvis Car & Engineering Co., Ltd., and G. T. Smith-Clarke, 742
Brake Drums. W. T. Groom, 833
Brakes and Clutches. H. C. Webb & Co., Ltd., and G. L. Atkinson, 588
Brakes, Front-Wheel. Albion Motor Car Co., Ltd., and J. Watt, 833
Chassis. Eagle Engineering Co., Ltd., and W. A. Woodward, 742
Gear, Steering. Daimler Co., Ltd., and J. Dixon, 710
Gears, Variable-Speed, Controlling. H. Munro, 680
Gearing, Change-Speed. C. F. Cleaver and The Four-Wheel Drive Lorry Co., Ltd., 186
Locomotives, Road. C. and F. C. Price, 153
Springs, Leaf. Alvis Car and Engineering Co., Ltd., and G. T. Smith-Clarke, 186
Springs, Leaf. H. Salter, 92
Vibration Dampers. H. C. Webb & Co., Ltd., and G. L. Atkinson, 154
Wheel Hubs. Raleigh Cycle Co., Ltd., and E. Glover, 833
Wheels, Sheet-Metal. Joseph Sankey & Sons, Ltd., and H. B. Sankey, 618

Pumps :

Bilge Pump Assembly. A. J. Middler, 680
Internal-Combustion Pumps. S. P. Christie, 154
Kerbside Pumps. Shell-Mex, Ltd., and J. Lawson, 742
Priming of Pumps. J. Stone & Co., Ltd., H. C. Hodgson and A. L. Paramor, 710
Pump. Albion Motor Car Co., Ltd., and J. D. Parkes, 742

Railways and Tramways :

Couplings, Automatic. H. S. Whyte, 833
Spring Suspension Arrangements. Cammell, Laird & Co., Ltd., and A. S. Bailey, 833

Ships and Nautical Appliances :

Bilges, Ships'. S. B. Freeman, 154
Logs, Ship. Thomas Walker & Son, Ltd., and T. S. and J. Walker, 154
Propellers, Ships'. H. E. Yarrow, 833
Turbine Plants. Hon. Sir C. A. Parsons and S. S. Cook, 618

Steam Engines, Boilers, Evaporators, &c.:

Boilers, Steam. A. W. Bennis, 404
Boilers, Water Heating and Steam Generating. A. W. Bennis, 154
Boilers, Water-Tube. John Thompson (Wolverhampton), Ltd., and A. Jeavons, 834
Boilers, Water-Tube. John I. Thornycroft & Co., Ltd., and R. Mackie, 834
Burners, Oil. Manchester Furnaces, Ltd., and J. Lowe, 250
Drying Steam. R. S. Portham and Tangential Dryers, Ltd., 250
Generators, Steam. T. Clarkson, 92
Generators, Steam. P. H. Hancock and H. C. Twinn, 186
Generators, Steam. Ransomes, Sims & Jefferies, Ltd., and F. A. Garrett, 524
Grates, Furnace. A. W. Bennis, 618
Stop Motions, Engine. C. E. Jones, 524
Stuffing-Box Joints. A. Green, 154
Valve, Isolating. Cockburns, Ltd., and D. MacNicoll, 186
Valves, Pressure-Reducing. R. A. Blakeborough and J. B. Broadhead, 834
Valves, Regulator. North British Locomotive Co., Ltd., and W. C. Wilson, 404
Valves, Relief. W. J. W. Bruce, 92
Water-Level Alarm. James Gordon & Co., Ltd., and C. H. Armstrong, 186
Water-Level, Indicators. C. H. Armstrong and J. J. Lassen, 710

Textile Machinery :

Silk, Artificial. E. Lunge and Courtaulds, Ltd., 404
Spinning Machines. T. Barbour, 524

NAMES OF PATENTEES.

Adkins, B. R., and others. Flexible Couplings, 404
Albion Motor Car Co., Ltd., and another. Front-Wheel Brakes, 833
Albion Motor Car Co., Ltd., and another. Pump, 742
Allingham, S., and others. Machines for Harvesting Flax, 30
Alvis Car and Engineering Co., Ltd., and another. Axle Suspension, 742
Alvis Car and Engineering Co., Ltd., and another. Leaf Springs, 186
Armstrong, C. H., and others. Water-Level Alarm, 186
Armstrong, C. H., and another. Water-Level Indicators, 710
Armstrong, Sir W. G., Whitworth Aircraft, Ltd., and another. Air Screws, 618
Associated Equipment Co., Ltd., and another. Clutches, 404
Atkinson, G. L., and others. Brakes and Clutches, 588
Atkinson, G. L., and others. Vibration Dampers, 154

Bailey, A. S., and others. Spring Suspension Arrangements, 833
Bailey, S. L., and others. Pistons, 30
Barbour, T. Spinning Machines, 524
Barlow, T. M., and another. Seaplanes, 30
Beardmore, W. (Lord Invernairn), and another. Internal-Combustion Engines, 250
Bennis, A. W. Furnace Grates, 618
Bennis, A. W. Steam Boilers, 404
Bennis, A. W. Water Heating and Steam Generating Boilers, 154
Birmingham Small Arms Co., Ltd., and others. Valve Gear, 153
Blakeborough, R. A., and another. Pressure-Reducing Valves, 834
Blyth, C. E., and another. Coal-Pulverising Machine, 742
Boby, Robert, Ltd., and another. Machines for Harvesting Flax, 30
Briggs, H., and others. Valve Gear, 153
British Insulated and Helsby Cables, Ltd., and another. Electric Cables, 250
British Insulated and Helsby Cables, Ltd., and another. Metal-Sheathed Electric Cables, 153
Broadhead, J. B., and another. Pressure-Reducing Valves, 834
Brown, David, & Sons (Huddersfield), Ltd., and another. Cutting Gear Teeth, 153
Brown, P., and others. Cutting Gear Teeth, 153
Bruce, W. J. W. Relief Valves, 92
Bryce, S. J., and others. Electric Cables, 250

Callender's Cable and Construction Co., Ltd., and another. Electric Cables, 250
Cammell Laird & Co., Ltd., and another. Spring Suspension Arrangements, 833
Chorlton, A. E. L., and others. Internal-Combustion Engines, 250
Christie, S. P. Internal-Combustion Pumps, 154
Clark, H., and others. Pulley Blocks, 92
Clarke, Chapman & Co., Ltd., and another. Hoisting Machinery, 524
Clarkson, T. Steam Generators, 92
Cleaver, C. F., and others. Change-Speed Gearing, 186
Cockburns, Ltd., and another. Isolating Valve, 186
Cocker Brothers, Ltd., and another. Laminated Springs, 588
Cockersoll, E. E., and others. Pneumatic Hammers, 742
Cook, S. S., and another. Turbine Plants, 618
Courtaulds, Ltd., and another. Artificial Silk, 404
Crozier, R. H. Distillation of Shale, 30

Daimler Co., Ltd., and another. Steering Gear, 710
Dick, R. & J., Ltd., and another. Driving Belts, 92
Dixon, J., and others. Steering Gear, 710
Douglas Motors, Ltd., and another. Internal-Combustion Engines, 680
Douglas Motors, Ltd., and another. Pistons, 30
Downing, A. G., and H. N. Moulding and Casting Metal Bodies, 742
Duncanson, F., and another. Seaplanes, 30

Eagle Engineering Co., Ltd., and another. Chassis, 742
Edwards, C. K., and others. Clutches, 404

Fairfield Shipbuilding and Engineering Co., Ltd., and another. Internal-Combustion Engines, 680
Four-Wheel Drive Lorry Co., Ltd., and another. Change-Speed Gearing, 186
Freeman, S. B., Ships' Bilges, 154
Fullilove, J. A., and another. Casting Hollow-Metal Articles, 186

Garrett, F. A., and others. Steam Generators, 524
Glover, E., and others. Wheel Hubs, 833
Gordon, James, & Co., Ltd., and another. Water Level Alarm, 186
Gray, P. W., and others. Gun-Sighting Telescopes, 833
Green, A. Stuffing Box Joints, 154
Greenwood, J. E., and others. Internal-Combustion Engines, 524
Groom, W. T. Brake Drums, 833

Haddon, W., and another. Casting Hollow Metal Articles, 186
Hancock, P. H., and another. Steam Generators, 186
Harland & Wolff, Ltd., and another. Ventilating Apparatus, 30
Hatcher, E. C. Power Transmission Gearing, 618
Head, Wrightson & Co., Ltd., and another. Pulley Blocks, 92
Herbert, Sir A., and another. Coal-Pulverising Machine, 742
Herbert, Sir A., and others. Drilling Machines, 680
Herbert, Sir A., and another. Work-Chucking Devices, 680
Hewitt, B. W., and another. Controlling Colliery Corves, 710
Hinde, W. J., and others. Internal-Combustion Engines, 588
Hodgson, H. C., and others. Priming of Pumps, 710
Holman, J. L., and A. T. Rock Drills, 92, 588
Hopkinson, A., and another. Controlling Colliery Corves, 710
Hoy, A. Y., and another. Coal-Cutting Machines, 404

Illingworth Carbonisation Co., Ltd., and another. Drying or Pre-Heating Coal, 92
Illingworth, S. R., and others. Drying or Pre-Heating Coal, 92

Jeavons, A., and others. Water-Tube Boilers, 834
Johnson, E. M., and others. Automatic Electric Circuit-Breakers, 30
Jones, C. E., Engine Stop Motions, 524

Kempster, J. W., and others. Ventilating Apparatus, 30

Lander, J., and others. Casting Metal Pipes, 710
Lassen, J. J., and another. Water Level Indicators, 710
Lawson, J., and others. Kerbside Pumps, 742
Lewis, W. Y., and others. Flexible Couplings, 404
Lloyd, A. H., and another. Work-Chucking Devices, 680
Lloyd, J. H., and others. Muffles or Furnaces, 92
Lowe, J., and others. Oil Burners, 250
Lunge, E., and others. Artificial Silk, 404

Macdonald, A. E., and others. Pistons, 588
Mackie, R., and others. Water-Tube Boilers, 834
MacNicoll, D., and another. Isolating Valve, 186
Main, G. A. Aerial Ropeways, 588
Manchester Furnaces, Ltd., and another. Oil Burners, 250
Marles, H. F. Ball or Roller Bearings, 153, 186
Marston, John, Ltd., and another. Internal-Combustion Engines, 524
Metropolitan-Vickers Electrical Co. Ltd., and another. Automatic Electric Circuit Breakers, 30
Middler, A. J. Bilge-Pump Assembly, 680
Moody, F. M., and others. Laminated Springs, 588
Motor Pistons, Ltd., and another. Pistons, 588
Munro, H. Controlling Variable-Speed Gears, 680

Never-Stop Transit, Ltd., and others. Flexible Couplings, 404
Nisbett, G. H., and others. Electric Cables, 250
North British Locomotive Co., Ltd., and another. Regulator Valves, 404

Packer, J. L., and others. Metal-Sheathed Electric Cables, 153

Palser, J., and others. Muffles or Furnaces, 92
Paramor, A. L., and others. Priming of Pumps, 710
Parkes, J. D., and another. Pump, 742
Parkinson, A., and others. Dynamo Electric Machinery, 153
Parkinson, F. & A., Ltd., and another. Dynamo Electric Machinery, 153
Parsons, Hon. Sir C. A., and another. Turbine Plants, 618
Pease & Partners, Ltd., and another. Pneumatic Hammers, 742
Phillips, J. M. Filtering Apparatus, 834
Pierce, J., Bevel Gearing, 404
Portham, R. S., and others. Drying Steam, 250
Pratt, F., and others. Airscrews, 618
Price, C., and F. C. Road Locomotives, 153
Pullin, C. G., and others. Internal-Combustion Engines, 680

Raleigh Cycle Co., Ltd., and another. Wheel Hubs, 833
Ransomes, Sims & Jefferies, Ltd., and another. Steam Generators, 524
Richardson, J. T. Roller Bearings, 833
Richardson, T., and others. Valve Gear, 153
Rimmer, G., and another. Coal-Cutting Machines, 404
Robson, John (Shipley), Ltd., and others. Internal-Combustion Engines, 588
Roe, E., and others. Aerial Ropeways, 250
Ropeways, Ltd., and another. Aerial Ropeways, 250
Ruston & Hornsby, Ltd., and another. Drag Buckets for Excavating, 524

Salmon, E. H., and others. Internal-Combustion Engines, 588
Salter, H. Leaf-Springs, 92
Sankey, H. B., and others. Sheet-Metal Wheels, 618
Sankey, Joseph, & Sons, Ltd., and another. Sheet-Metal Wheels, 618
Savage, W., and others. Drag-Buckets for Excavating, 524
Shell-Mex, Ltd., and another. Kerbside Pumps, 742
Shotter, G. F. Electrical Apparatus for Measuring Level and Flow of Liquids, 153
Smith-Clarke, G. T., and others. Axle Suspension, 742
Smith-Clarke, G. T., and others. Leaf Springs, 186
Stanton Ironworks Co., Ltd., and another. Casting Metal-Pipes, 710
Stone, J., & Co., Ltd., and others. Priming of Pumps, 710

Talbot, B. Metallurgical Furnaces, 153
Tangential Dryers, Ltd., and another. Drying Steam, 250
Taylor, E. W., and others. Gun Sighting Telescopes, 833
Thompson, John, (Wolverhampton), Ltd., and another. Water-Tube Boilers, 834
Thornycroft, John I., & Co., Ltd., and another. Water-Tube Boilers, 834
Tood, D., and others. Driving Belts, 92
Traill, R., and others. Internal-Combustion Engines, 680
Twinn, H. C., and another. Steam Generators, 186

Vernon, P. V., and others. Drilling Machines, 680
Vickers, Ltd., and others. Gun Sighting Telescopes, 833

Walker, Thomas, & Son, Ltd., and others. Ship Logs, 154
Walker, T. S., and J., and others. Ship Logs, 154
Walter, C. M., and others. Muffles or Furnaces, 92
Watt, J., and others. Front-Wheel Brakes, 833
Webb, H. C., & Co., Ltd., and another. Brakes and Clutches, 588
Webb, H. C., & Co., Ltd., and another. Vibration Dampers, 154
West, F. J. and E., and others. Vertica Retorts, 618
West's Gas Improvement Co., Ltd., and others. Vertical Retorts, 618
Whyte, H. S. Automatic Couplings, 833
Wilson, C., and others. Drilling Machines, 680
Wilson, W. C., and others. Regulator Valves, 404
Woodeson, W. A., and others. Hoisting Machinery, 524
Woodward, W. A., and others. Chassis, 742

Yarrow, H. E. Ships Propellers, 833

PARAGRAPHS.

Accidents:
Aeroplane Accident, Fatal, Paris-Croydon, 547
Foremen and Accident Prevention, 642
Gas Accident, Swiss Railway Tunnel, 556
Newcastle Collision, L. & N.E. Railway, 544
Pontefract, Boiler Explosion, 103
Prevention of Accidents, 372
Safety First in Engineering Works, 327

Aeronautics :
Air Flow in Wake of Aerofoil, 766
Apprentices, Aircraft, Vacancies for, 167
Aviation Gold Medal Award, 449
Bearings, Ball, in Aeroplane Engines, 487
Boats, Flying, Long-Distance Cruise, 209
Busk Studentship, 228
Cairo-Aden Service Cruise, 386
China, Commercial Aviation in, 434
Flight Cadets, Conditions of Service, &c., 357
Flight-Cadetship Awards, 265
Paris International Exhibition, 241
Royal Air Force, Short Service Commissions, 327
"Shenandoah," Airship, Loss of, 145
Thermometers, Aircraft (Catalogue), 282

Agriculture :
Farm, Electrically Operated, 447
Poona Agricultural Show, 757
Russian Imports of Machinery, 610

Alloys. See *Mining and Metallurgy*

Appointments, Awards, &c. :
Cobham, Sir A., Aviation Gold Medal, 449
Electricity Commission Appointment, 494
Fleming, Prof. J. A., Presentation, 169
Greig, Miss J. M., Concrete and Constructional Engineering Prize, 73
Manchester University, Chair of Mechanical Engineering, 167
Parsons, Hon. Sir Chas. A., Kelvin Gold Medal, 478
Philips Lamps, Ltd., Bucharest Exhibition Award, 822
Turner, Prof., Testimonial, 73

Automobiles. See *Motor-Cars*

Boilers. See *Engines and Boilers*

Bridges :
Gartz, Bridge Collapse, 802
Haven Bridge, Yarmouth, Reconstruction Contract, 107
Shanghai Public Works Developments, 121
Sone Bridge, India, *Erratum*, 600

Buildings and Building Construction :
Architecture, Lectures on, 586
Brick-Making Machinery (Catalogue), 218
Building Research Station, 509
Factory and Workshop Act: Building Regulations, 121
Floors, Concrete, Treatment of, 679
Heating, Central, Copper Tubes for, 387
Heating, Low-Pressure Steam, Need for Relief Valves, 387
"Pitman's Building Educator," 578

Canals :
Panama Oil Shipments, 326
Panama Traffic, 249

Catalogues, 15, 59, 91, 152, 185, 218, 248, 282, 342, 372, 434, 464, 494, 556, 586, 741, 802
A.C.E.C., 59, 248, 556
Acme Lock Nut Co., Ltd., 342
A.E.G. (Berlin), 91
A.E.G. Company, 556
Allen, Edgar & Co., Ltd., 741
American Resistor Corporation, 152
Ames, Edgar, 282
Anderson, D., & Son, Ltd., 464
Armstrong, Sir W. G., Whitworth & Co., Ltd., 741
Atkins, E. C., & Co., Inc., 556
Automatic and Electric Furnaces, Ltd., 185, 282, 741
B.S.A. Tools, Ltd., 152
Barrett, Haentjens & Co., 218
Beck, O. N., 464
Beecroft & Partners, Ltd., 248
Bernais, E., & Co., Ltd., 91
Birch, John, & Co., Ltd., 741
Blackman Export Co., Ltd., 248
Blackstone & Co., Ltd., 586
Bleichert, Adolf, & Co., Ltd., 185
Bowden-Smith, E. C., 741
Braby, Frederick, & Co., Ltd., 802
Brackett, F. W., & Co., Ltd., 152
Braithwaite & Co., Ltd., 248
Bridge, David, & Co., Ltd., 372
British Commercial Gas Association, 556
British Insulated Cables, Ltd., 59, 218, 494, 741, 802
British Steel Piling Co., Ltd., 282
British Thomson-Houston Co., Ltd., 434, 832
Brittain's Electric Motor Company, 372
Brock & Weymouth, 15
Brook, E., Ltd., 248, 342
Brooke, J. W., & Co., Ltd., 185
Brotherhood, Peter, Ltd., 185
Brown-Boveri, Ltd., 434, 556
Brown, David, & Sons (Hudd.), Ltd., 59, 741
Butler Machine Tool Co., Ltd., 15
Burroughs, Wellcome & Co., 248
Cambridge Instrument Co., Ltd., 185, 248, 802
Casella, C. F., & Co., Ltd., 832
Chadderton Conveyor Co., Ltd., 741
Clayton, Goodfellow & Co., Ltd., 218
Celite Products Corporation, 248
Colas Products, Ltd., 802
Consett Iron Co., Ltd., 152
Consolidated Pneumatic Tool Co., Ltd., 155
Cooke, Troughton & Simms, Ltd., 185, 248
Copperweld Steel Co., 59
Court Works, Ltd., 218
Crabtree, R. W., & Sons, Ltd., 185
Crofts (Engineers), Ltd., 185, 741
Crompton & Co., Ltd., 372
Crosby Valve and Engineering Co., Ltd., 248
Crossley Brothers, Ltd., 464 (2)
Cutbill, King & Co., Ltd., 494
D. P. Battery Co., Ltd., 185
Damard Lacquer Co., Ltd., 248
Darlington Fencing Co., Ltd., 185
Delco-Remy and Hyatt, Ltd., 185, 218
Deloro Smelting and Refining Co., Ltd., 248
Deutsche Maschinenfabrik A.G., 91
Dowding and Dickinson, 185
Dowdings Machine Tool Co., Ltd., 218
Durvite, Ltd., 248
Eitzen, Louis C., Company, 91
Electric Construction Co., Ltd., 152, 434
Electric Vehicle Committee, 556
Ellison, G., 218
English Electric Co., Ltd., 218, 282, 342, 464
Evershed and Vignoles, Ltd., 59, 372
Ewart and Son, Ltd., 741
Ferranti, Ltd., 152, 248, 282
Foster Instrument Co., Ltd., 152
Geipel, Wm., & Co., 494
General Electric Co., Ltd., 464, 586, 741, 802
Gent & Co., Ltd., 342
Gerhardi, W., 586
Glenfield & Kennedy, Ltd., 372
Godfrey Engineering Works, 218
Gordon, James, & Co., Ltd., 248
Green, George, & Co., Ltd., 218
Guest's Brass Stamping Co., 185
Harland Engineering Co., Ltd., 586
Harland & Wolff, Ltd., 556
Harnischfeger Corporation, 248
Harvie Corporation, Ltd., 372
Hathorn, Davey & Co., Ltd., 556
Haynes Stellite Co., 91
Herbert, Alfred, Ltd., 185, 218
Herbert, Ltd., G., Ltd., 741
Hick, Hargreaves, & Co., Ltd., 218
Higgs Motors, 282
Holland, Bernard & Co., 832
Hollings & Guest, Ltd., 248, 372
Holst, K., & Co., 218
Hopkinsons, Ltd., 741, 752 (*Erratum*)
Hughes, Bolckow, & Co., Ltd., 185
Hurner, R., Ltd., 741
Industrial Welded Products Co., 91
International Combustion, Ltd., 15
Johnson & Phillips, Ltd., 342
Jones & Lawson Machine Co., 218
Kaye, Joseph, & Sons, Ltd., 802
Keith, James, & Blackman Co., Ltd., 248, 282, 342, 802
Kent, Ltd., G., 494
Lacy-Hulbert & Co., Ltd., 218
Lancashire Dynamo & Motor Co., Ltd., 494
Lang, John, & Sons, Ltd., 91
Lennox Foundry Co., Ltd., 464
Leyland Motors, Ltd., 185
Lovick Johnson Co., 185
Lunken Co., Ltd., 494, 586
Manlove, Alliott, & Co., Ltd., 342
Marles Bearing Co., Ltd., 59
Marshall, Sons & Co., Ltd., 152, 342, 556, 741
Mason Gas Plant Co., Ltd., 248
Massey, B. & S., Ltd., 434
Master Builders Co., 802
Mather & Platt, Ltd., 556
Metropolitan-Vickers Electrical Co., Ltd., 91, 152, 282, 556
Mirrlees Watson Co., Ltd., 152
Morden, S. H., & Co., Ltd., 741
Morris, Herbert, Ltd., 248, 494
Musgrave & Co., Ltd., 185
Negretti & Zambra, 218, 282
Newton, Chambers & Co., Ltd., 802
Oerlikon, Ltd., 59
Osborne, Samuel, & Co., Ltd., 741
Parsons, C. A., & Co., Ltd., 152
Parsons Motor Co., Ltd., 59, 152
Pels, Henry, 494
Petters, Ltd., 556
Pickles, John, & Sons, Ltd., 434
Pirrit Specialities, Ltd., 185
Pittsburg Electric Furnace Corporation, 586
Plenty & Son, Ltd., 741
Power Specialty Company, 15
Pratt, F., & Co., Ltd., 342
Premier Cooler & Engineering Co., Ltd., 372
Priestman Bros., Ltd., 741
Pulsometer Engineering Co., Ltd., 185, 494
Rae, Joshua, & Sons, Ltd., 741
Ransome Machinery Co. (1920), Ltd., 91
Ransome, Sims, & Jefferies, Ltd., 556
Ransomes & Rapier, Ltd., 185
Rateau Company, 802
Rees Roturbo Manufacturing Co., 248
Relay Automatic Telephone Co., Ltd., 556
Renold, Hans, Ltd., 372, 586
Republic Flow Meters Co., 282
Reyrolle, A., & Co., Ltd., 586
Rhein-Schelde Engineering Co., 741
Robey & Co., Ltd., 218
Royles, Ltd., 59
Russell & Co., 741
Ruston & Hornsby, Ltd., 832
Sanderson Cyclone Drill Co., 15
Sankey, J. H., & Son, Ltd., 248
Sheffield Steel Products, Ltd., 586
Siemens Bros., & Co., Ltd., 741
Simon, Henry, Ltd., 15
Sisson, W., & Co., Ltd., 494
Smethurst, Herbert, & Sons, 282
Spencer-Bonecourt, Ltd., 586
Spencer (Melksham), Ltd., 218
St. Helen's Cable & Rubber Co., Ltd., 185, 372
Standard Telephones & Cables, Ltd., 372
Steam Fittings Co., Ltd., 248
Stewarts & Lloyds, Ltd., 832
Stilson, White & Co., Ltd., 218
Stothert & Pitt, Ltd., 832
Sulzer Brothers, 556
Svenska Aktiebolaget Nobel-Diesel Co., 15
Tagliabue, C. J., Manufacturing Co., 15, 185
Tilghman's Patent Sand Blast Co., Ltd., 218
Traylor Engineering & Manufacturing Co., 372
Tucker, J. H., & Co., 248
Turner, Stuart, Ltd., 185
Uehling Instrument Co., 248
Vacuum Oil Co., Ltd., 218
Venesta, Ltd., 372
Ventex Electrical Co., 185
Vickers-Commonwealth Steel Products, Ltd., 494
Wadsworth, William, & Sons, Ltd., 282
Waukesha Motor Co., 556
Weir, G. & J., Ltd., 586, 802, 832 (2)
Westinghouse Brake and Saxby Signal Co., Ltd., 91, 832
Westinghouse Electric International Co., 248, 586
Westinghouse Electric and Manufacturing Co., 342
Yorkshire Copper Works, Ltd., 15
Young, A. S., & Co., 372

Cement and Concrete :
Blast-Furnace Cement, Portland, Standard, 383
Celite, an Admixture for Concrete, 501, 538 (*Addendum*)
Concrete and Constructional Engineering Prize, 73
Concrete Finish (Catalogue), 802
Consulting Engineers and Reinforced Concrete Work, 14
Floors, Concrete, Treatment of, 679
Moulding Press, Concrete (Catalogue), 91
Ready-Mixed Concrete Supply, 471
Reinforced Concrete Construction (Catalogue), 218

Chemistry. See *Physics and Chemistry*

Coal :
Beckton Works Coal-Handling Plant, *Erratum*, 724
Cardiff, 14, 45, 77, 107, 137, 169, 201, 233, 265, 297, 357, 387, 419, 449, 479, 509, 539, 571, 601, 633, 663, 695, 724, 757, 787, 817
Coal Dust, Fineness and Explosibility, 39
Coal Exporters' Association, South Wales, 449
Coal Products (Catalogue), 152
Colliery Deals, 695, 787
Colliery Engine, Rapid Erection, 455
Czechoslovakia, Coal Exports, 518
Fans, Mine (Catalogue), 248
Hull Trade, 77
Machinery, Mining (Catalogues), 556, 832
Middlesbrough Coke, 14, 45, 77, 107, 137, 169, 201, 232, 264, 296, 327, 356, 386, 418, 508, 538, 570, 600, 632, 662, 694, 724, 757, 786, 816
Pulverised Fuel (Catalogue), 218
Sheffield, 15, 45, 77, 107, 137, 169, 201, 232, 264, 296, 326, 356, 386, 418, 448, 479, 508, 538, 570, 600, 632, 663, 695, 725, 757, 787, 816
Stone Dusting in Mines, 106, 377
Stream Pollution by Acid Mine Drainage, 419
United States, Bituminous Coal Conference, 449, 584

Colleges. See *Education*

Companies :
British Hispano Line, Ltd., 479, 509
Claymore Shipping Co., Ltd., 265
Ocean Coal Co., Ltd., 695
United National Collieries, Ltd., 695

Concrete. See *Cement and Concrete*

Cranes, Conveyors, &c. :
Chains, Conveyor (Catalogue), 586
Conveying and Elevating Machinery (Catalogues), 185, 218, 372, 741
Conveyors, Belt, Portable (Catalogue), 372
Crane, Floating, "London Mammoth," Launch, 677
Crane, Mobile, Petrol-Electric (Catalogue), 185
Cranes, Electric (Catalogues), 494, 556
Cranes, General (Catalogue), 185, 248
Lifting Tackle (Catalogue), 185
Lifts, Electric (Catalogue), 282

Education :
Aeronautics, Busk Studentship, 228
Architecture, Lectures on, 586
College, London Labour, 597
Crystal Palace School of Engineering, 201, 817
Easton Lodge, Labour Educational Scheme, 293, 580
Fleming, Prof. J. A., Presentation, 169
Gas Apprentices, Testing Centre for, 724
German Metalworkers' School of Economics, 394
Gizeh, Egypt, School of Engineering, 74
Manchester College of Technology Journal, 494
Manchester University, Chair of Mechanical Engineering, 167
"Saw Doctors" School of Instruction, 165
Sir John Cass Technical Institute, 113, 245, 485
Viziangaram College Journal, 252
Whitworth Scholarship Awards, 709

Docks. See *Harbours, &c.*

Electric Tramways. See *Tramways*

Electricity :
Apparatus, General (Catalogue), 185, 218
B.E.A.M.A. Book, 304
Birkenhead Telephone, Exchange, 722
Birmingham Electricity Undertaking, Accounts, 357
Bolivian Post and Telegraphs and Marconi Co., 209
C.V. (Clyde Valley) Magazine, 269
Cables, Electric (Catalogues), 185, 802
Cable Fittings (Catalogue), 152, 494
Cables, Insulated, Cover Sockets, Standard, 383
Carbon Products (Catalogue), 494
Circuit Breakers (Catalogue), 586
Contractors, Electrical, Year Book, 456
Converters, Rotary (Catalogues), 372, 434
Distributors, Loaded, Voltage Control on, 54
Dynamos (Catalogue), 282
Ebonite Panels, Radio, Standard, 807
Electricity Commission Appointment, 494
Electricity Undertakings, *Electrican* Tables, 356
Electrometers (Catalogue), 802
Faraday House Journal, 214
Farm, Electrically-operated, 447
Ferromanganese, Anodic Behaviour of, 611
Fittings, Electric (Catalogues), 185, 248, 342
Galvanometer (Catalogue), 248
Generators and Motors, Standard, 737
Heating Elements (Catalogue), 152
Iceland, Hydro-Electric Developments, 209
Ignition, Electric, Petrol Engines (Catalogue), 218
India, Transformer Contract, 478
Instruments, Electrical (Catalogue), 59
Italy, Hydro-Electric Power Developments, 567
Lamp, Oaram, for Pendeen Lighthouse, 655
Lamp Protector, Glamat, 663
Lamps, Electric (Catalogue), 802
Lighting Accessories (Catalogue), 741
Lighting Sets (Catalogue), 185
Machinery, Electrical, General (Catalogues), 59, 91, 248, 282, 342, 434, 586
Machinery, Electrical, Revised Standard Rules, 357
Meters (Catalogue), 741
Mining Electrical Machinery (Catalogue), 91
Motors, General (Catalogues), 152, 248, 282 (2), 342 (2), 372, 434, 556, 586
Motors and Generators, Standard, 737
Plant, Electrical, General (Catalogue), 59, 152
Plant Protection, Electric (Catalogue), 464
Power Plant Instruments (Catalogue), 282
Power Plant Lubrication, *Erratum*, 354
Power Plant, Mill (Catalogue), 464
Power Plant, Töging (Catalogue), 556
Power Station, Widnes, United Alkali Co., 15
Prepayment Meter (Catalogue), 59
Salford Borough Report, 471
Solenoids, Brake (Catalogue), 218
Stepney Electricity Supply, 722
Switchgear (Catalogues), 282, 342, 434, 586
Switchgear Equipment, D.C. Circuits, Standard, 694
Tachometer (Catalogue), 372
Telephones (Catalogues), 556
Telephones, Automatic, in Canton, 806
Testing Equipment, High-Tension (Catalogues), 248, 282
Testing Laboratories, Faraday House, 594
Textile Mill Motors (Catalogue), 152
Transformers (Catalogues), 218, 464
Turbine, Helical Water, Geometry of, *Errata*, 232
Turbine, High-Pressure Steam, at Boston, 240
Turbo-Alternator Set, 41,000-kw., Manchester, 513
United Alkali Company's Power Station, Widnes, 15
United States Power Production, 417
Welding, Arc, Supplies (Catalogue), 372
Westphalian Electricity Works, 811
Wiring, Electric (Catalogue), 372
Wireless, Index to Publications, &c., 68
Wireless, Navigation by, 15
Wireless Receiving Aerials, Insulator for, 264
Wireless Station, Nanking, 794
Wireless Station, Tientsin, 324
Wireless Telephones, Basra, 272
Wireless Telephones in Manchuria, 678

Engines and Boilers :

Boiler, Gas-Fired (Catalogue), 586
Boiler-House Instruments, 15
Boiler Plant (Catalogue), 832
Boilers, Steam (Catalogue), 218
Condensing Plant (Catalogue), 218
Diesel Engines, Marine (Catalogue), 15
Economisers (Catalogue), 15
Engines, Steam (Catalogues), 218, 494
Feed Pumps (Catalogue), 556
Fire Doors, Oil-Fuel, under Boilers, 45
Locomobile Engines (Catalogue), 342
Piston Ring, Clupet, 587
Scalers, Boiler (Catalogue), 494
Stokers, Mechanical (Catalogue), 91
Superheaters (Catalogue), 15
Turbine Blades (Catalogue), 152
Turbine, Bradford 20,000-kw. Impulse Reaction, *Erratum*, 702
Turbines, Steam (Catalogues), 185, 802
Turbo-Blower, Blast Furnace Plant, 177
Vacuum Recorder (Catalogue), 248
Valves (Catalogue), 248, 586, 741
Water-Cooling Towers (Catalogue), 372
Water Flow Meters (Catalogues), 248, 494

Errata and Addenda :

Annular Pipes, Friction of, 292
Beckton Works Coal-Handling Plant, 724
Beryllium, 725
Boilers, Water-Tube, of "Majestic," 37
Bradford, 20,000-kw. Impulse Reaction Turbine, 702
British Association, Oxford Meeting, 304
Celite; Admixture for Concrete, 538
Collision of α Particles with Light Atoms, 304
Excavating Machines, Large, 816
Gas Engineer's Pocket Book, 548
Hopkinsons, Ltd., 752
Indian Engineering, Sone Bridge, 600
Locomotive, Express, High-Pressure Compound, 231
Naval Architects, Institution of, 37
Pipe Wrench, Vulcan Chain, 68
Power Plant Lubrication, 354
Timber-Testing, Application of, 516
Turbine, Helical Water, Geometry of, 232

Exhibitions :

Aeronautical, International, Paris, 241
British Industries Fair, Birmingham, 472, 725
Cairo International Motor Show, 190
Cardiff Engineering Exhibition, 169
Coal Products, Chemical and Engineering, 571
Electrical, Optical and Physical Apparatus, 539
Geneva International Motor Show, 246
Health Exhibition, Hastings, 610
Inventions, International Exhibition of, 137
Ironmongery, Hardware and Domestic Appliances, 662
Leeds Industrial, 265
London University College Exhibition and Soirée, 663
Madrid, Town Planning and Housing, 702
"Model Engineer" Exhibition, 167
Road Transport Exhibits, 23
Volta Exhibition, 641

Explosions. See *Accidents*

Explosives. See *Guns and Explosives*

Ferro-Concrete. See *Cement and Concrete*

Fire Prevention. See *Miscellaneous*

Flying Machines. See *Aeronautics*

Gas :

Gas Engineer's Pocket Book, *Erratum*, 548
Gas Industry Apprentices, Training Centre for, 724
Gas Pipes, Valves and Fittings, Standard Flanges, 667
Heating, Gas (Catalogue), 282
Natural Gas, Temperature Fluctuations in Pipe Lines, 648
Shop Lighting (Catalogue), 556

Gas and Oil Engines :

Diesel Engine Temperatures (Catalogue), 556
German Oil Engine Patents and Vickers, 33, 51
Ignition, Engine (Catalogue), 185, 218
Marine Oil Engines, Large (Catalogue), 556
Marine Oil Engines for Small Craft (Catalogues), 59, 556
Oil Engines (Catalogues), 152, 464, 741 (2), 832

Harbours, Docks, &c. :

Aden Port Improvements, 509
Ayr Harbour Improvements, 249
Fal River Improvement, 702
Harbour Machinery (Catalogue), 832
Lisbon, New Naval Arsenal, 393
Pembroke Dockyard, Admiralty Lease of, 395
Rangoon Port Statistics, 687
Tyne Improvements, 45
Walsh Island, Australia, Floating Dock, 579

Heating. See *Miscellaneous*

Hydraulics :

Annular Pipes, Friction in, *Erratum*, 292
Centrifugal Pumps, Automatic Control (Catalogue), 218
Centrifugal Pumps, Sludge, &c. (Catalogue), 586
Helivane Pumps (Catalogue), 556
Pump Calculations, Chart for, 795
Pumps, General (Catalogue), 248, 494
Turbine Pumps (Catalogue), 185
Valves, Sluice, Electrically-operated (Catalogue), 372

Industries and Commerce :

Advertisement Directory, Standard, 357
Birmingham Electricity Undertaking, Accounts, 357
British Malaya Machinery Imports, 787
Canada, Printing Presses for, 240
Cardiff Industrial Activities, 356
Chambers of Commerce and Industrial Unrest Legislation, 597
Cheadle Heath Work (Simons), Opening, 175
Contractors and Public Works Annual Directory, 201
Contracts, 53, 77, 107, 136, 137, 168, 200, 233, 264, 297, 354, 387, 418, 448, 479, 508, 539, 579, 609, 632, 662, 704, 733, 757, 786, 817
Engineering Industry, Monograph, 450
General Strike and Foreign Trade, 233
Income Tax Charts and Handbook, 296
Leeds, Industrial, 265
Manchuria, Engineering in, 190
Merchants, Manufacturers and Shippers' Directory, 357
New Zealand as an Empire Market, 62
Newport, Industrial Position, 591
Old Colony Club, 115
Paint Manufacturers, British Research Association, 526
Paper Trade Directory of the World, Phillips', 831
Personal, 12, 45, 107, 137, 168, 201, 231, 264, 296, 327, 354, 387, 419, 443, 488, 508, 547, 571, 600, 642, 672, 694, 733, 757, 787, 816
Petroleum Industry, American, and Fuel Oil, 809
Rates, Burden on Industry, 555
Respirators, Dust, Tests of, 106
Rubber Articles, Moulding and Vulcanisation, 721
Sands, Clays and Economic Materials, 508
Scotch Trade, General, 357
Silk, Artificial, American Rayon Viscose, 782
Slag, Basic, French Exports, 601
Statistics, Official, Guide to, 265
Swansea Tinplate Industry, 469
Swedish Sawmill and Wood Pulp Industries, 218
Tenders, 12, 53, 77, 116, 136, 169, 200, 233, 265, 297, 327, 354, 387, 419, 449, 479, 513, 539, 571, 601, 641, 671, 694, 724, 757, 787, 817
Viscose, American Rayon, 782
Welfare Society, Industrial, 371
Wellington Harbour Trade, 464

Institutions. See *Technical Societies*

Iron and Steel :

British and Continental Industries, Conditions, 137
British Productions, 115, 397, 357, 617, 705, 786
Cast Iron Research Association, Castings, Centrifugal (Catalogue), 802
Casting, Iron, 110-Ton, 679
Castings, Small (Catalogue), 218
Cleveland, 14, 45, 77, 107, 137, 169, 201, 232, 264, 296, 327, 356, 386, 418, 448, 479, 508, 538, 570, 600, 632, 662, 694, 724, 756, 786, 816
Cleveland Ironstone Miners' Wages, 107
Continental and British Industries, Conditions, 137
East Coast Hematite, 14, 45, 77, 107, 137, 169, 201, 232, 264, 296, 327, 356 386, 418, 448, 479, 508, 538, 570, 600, 632, 662, 694, 724, 756, 786, 816
Eston Sheet Works, Sale, 632
French Rail Exports, 411
Furnaces, Steel, High-Frequency Induction, 755
Holidays, Scotch Districts, 77
Iron Products (Catalogue), 152
Middlesbrough Foreign Ore, 14, 45, 77, 107, 137, 169, 201, 232, 264, 296, 327, 356, 386, 418, 538, 600, 632, 662, 694, 724, 756, 786, 816
National Production, 115, 297, 357, 617, 705, 786
Slate Contract, Dowlais Works, 387
Prices, Wall Chart, 757
Pumps, Iron and Steel, Canadian Manufacture, 832
Scotch Shipments, 15, 45, 77, 107, 137, 169, 201, 233, 264, 297, 327, 357, 387, 419, 449, 478, 509, 539, 571, 601, 633, 663, 694, 724, 756, 787, 817
Scotch Trade, 15, 45, 77, 107, 137, 169, 201, 233, 264, 297, 327, 357, 387, 419, 449, 478, 509, 539, 571, 601, 633, 663, 694, 724, 756, 787, 817
"Seva" Soldering Iron, 418
Sheffield, 15, 45, 77, 107, 137, 169, 201, 232, 264, 296, 326, 356, 386, 418, 448, 479, 508, 538, 570, 600, 632, 663, 695, 725, 757, 787, 816
Stairs, Steel (Catalogue), 802
Steel, Edgar Allen (Catalogue), 741
Steels, General Purpose, 263
Steel, Heat Treatment (Catalogue), 185
Steel, Vickers-Commonwealth (Catalogue), 494
Tees Imports, 45, 327, 448, 570, 724
Tees Shipments, 45, 169, 327, 448, 570, 724
Tool Steels (Catalogue), 741
Tubes (Catalogue), 832
Tubes, Steel, Tables of Capacities, 687
United Kingdom Industry, 71
United States Iron Industry, 60
United States Iron and Steel Production, 613
Welding Repair, Cast Iron, 556
Welsh Trade, 45, 77, 107, 137, 169, 357, 449, 571, 601, 757

Irrigation :

Levelling Instruments (Catalogue), 248

Labour Questions. See *Trade Societies, &c.*

Legal and Legislation :

Factories (No. 2) Bill, 210

Legal and Legislation—*continued.*

Factory and Workshop Act: Building Regulations, 121
Industrial Dispute Bill, 658
Lead Paint (Protection Against Poisoning) Bill, 757
Woodworking Machinery Regulations, 1922, 169

Lighting. See *Electricity and Gas.*

Literature. See LITERATURE INDEX.

Locomotives. See *Railways.*

Machine and Other Tools :

Diamond Saw Blades, Maintenance, 757
Dieheads, Screwing (Catalogue), 185
Gear-Cutting Machines (Catalogue), 185
Grinding Machines, Regulations, 752
Hammers, Power (Catalogues), 434, 464
Hacks, Lifting (Catalogue), 185
Lapping Machine (Catalogue), 152
Lathes (Catalogues), 15, 91, 218
Lathe Chucks (Catalogue), 342
Lathe, Repetition, Equipment (Catalogue), 218
Machine Tools, General (Catalogue), 218
Milling Cutters Stellite (Catalogue), 91
Pipe Wrench, Vulcan Chain, *Addendum*, 68
Planing Machines (Catalogue), 494
Power Machines, Hand (Catalogues), 741
Reamers (Catalogue), 741
Saws (Catalogue), 741
"Saw Doctors" School of Instructions, 165
Shears, Bar-Cutting (Catalogue), 494
Stellite for Cutter Bits (Catalogue), 248
Vice, Universal Hand or Machine, with Revolving Head, 802
Wire-Drawing Machines (Catalogue), 586
Woodworking Machines (Catalogue), 434
Woodworking Machinery Regulations, 169

Markets :

Cleveland, 14, 45, 77, 107, 137, 169, 201, 232, 264, 296, 327, 356, 386, 418, 448, 479, 508, 538, 570, 600, 632, 662, 694, 724, 757, 786, 816

Marine Engineering. See *Engines and Boilers, Ships*

Mining and Metallurgy :

Aluminium-Cobalt Alloys, Sand-Cast, 103
Aluminium Foundry Work, 478
Asbestos, United States Production, 372
Bauxite, U.S. Output, 25
Beryllium, *Errata*, 725
Blasting Operations, Working and Machinery (Catalogue), 15
Blower, Turbo, for Blast Furnace, 177
Brass Bars and Sections, Standard, 97
Brass Stampings, Die Press (Catalogue), 185
Brazing Material (Catalogue), 741
California, Mineral Wealth, 381
Canadian and U.S. Gold Mines, 506
Case-Hardening (Catalogue), 248
Electrical Machinery, Mining (Catalogue), 91
Fans, for Cupolas (Catalogue), 248
Ferromanganese, Anodic Behaviour of, 611
Fire Brick Cement (Catalogue), 248
Foundry Plant (Catalogue), 218
Foundry Work (Catalogue), 248
Furnaces, Electric (Catalogue), 586, 741
Furnaces, Electric, Lantern Slides, 544
Heat Treatment (Catalogue), 282
Idaho, Mineral Wealth, 381
Lead Production, Ontario Mines, 147
Limestone, Flotation from Siliceous Gangue, 45
Mill Machinery (Catalogue), 372
Monel Metal (Catalogue), 586, 832
Morocco, Phosphate Deposits, 483
Mouldings, Formite-Bakelite (Catalogue), 248
Mouldings, Light (Catalogue), 248
Pennsylvania Mineral Wealth, 676
Pyrometers, General (Catalogues), 152, 218, 248
Pyrometer Protection Tubes (Catalogue), 91
Russian Platinum Production, 785
Slip in Repeated-Stress Tests, 516
Temperature Recorders, Automatic (Catalogue), 185
Tunisia, Mineral Wealth, 724
United States and Canadian Gold Mines, Comparison, 506
United States Lead Production, 441
United States Manganese Ore Imports, 409
United States Mica Production, 431
United States Oil Production, 409
United States Zinc Production, 418
White Metal Alloy (Catalogue), 248
Yunnan Tin Exports, 449
Zinc Retorts, Bibliography, 464

Miscellaneous :

Air Compressors (Catalogue), 802
Air Diffuser, Antiseptic (Catalogue), 282
Air Heaters (Catalogue), 342
Astronomical Instruments (Catalogue), 185
Bitumen Preparation (Catalogue), 464
Bolivian Posts and Telegraphs and Marconi Co., 209
Books, Scientific and Technical, Science Guild Catalogue, 677
Bookbinding Machinery (Catalogue), 741
Breathing Bags, Prevention of Petrol Evaporation, 5
Brick-Making Machinery (Catalogue), 218
British Columbia, Highway Improvement, 788
Calendars, 22, 364
Cheadle Heath Works, Opening, 175
China, for Young Engineers, 508
Contractors and Public Works Annual, Directory, 201
Contracts, 53, 77, 107, 136, 137, 168, 200, 233, 264, 297, 354, 387, 418, 448, 479, 508, 539, 579, 609, 632, 662, 704, 733, 757, 786, 817
Copper Tubes for Hot and Cold Water (Catalogues), 15

Miscellaneous—*continued.*

Cornwall Works, Birmingham, History, 265
Coventry Public Libraries, 420
Drying Plant (Catalogue), 342
Ebonite (Catalogue), 741
Engineering Index, 1925, 175
Engineering Industry, Monograph, 450
Engineering Plant, General (Catalogue), 91
Engineering Standards, 45, 97, 214, 357, 383, 667, 694, 737, 741, 807
"English and Amateur Mechanics," 578
Excavating Machines, Large, *Erratum*, 816
Fans (Catalogues), 185, 248
Fan Ventilation in a Weaving Shed, 484
Fencing, Various (Catalogue), 185
First-Aid Cupboards, 198
Flanges for Gas Pipes, Valves and Fittings, Standard, 667
Flour Milling Plant (Catalogue), 15
Fuels, Liquid, Spontaneous Combustion of, 365
Grinding Mills, Ball (Catalogue), 15
Heat Insulation (Catalogue), 248
Heater, Gas, for Water (Catalogue), 741
Heaters, Milietherm (Catalogue), 59
Heating, Low-Pressure Steam, Need for Relief Valves, 387
Hospital Engineering Plant, Lecture, 433
Hot Water Supply (Catalogue), 802
Illumination by Acetylene Lights, Liverpool, 509
Income Tax Charts and Handbook, 296
Invention and Science, Lectures on, 494
Lantern Slides, Loan Offer, 395
Libraries, Special, and Information Bureaux, 201, 334
Lock Nuts (Catalogue), 342
London Underground Streets, 547
Lubricants (Catalogue), 218
Lubrication, Gargoyle Technical Series, 297
Lubrication, Power Plant, *Erratum*, 354
Manchuria, Engineering in, 190
Map Making, Aerial (Catalogue), 15
Metal Cutting, Oxygen, 788
Montreal, Large Warehouses and Cold Storage Plant, 596
Mill Machinery (Catalogue), 152
Oil in Ontario, Diamond Drilling for, 703
Oil Storage Apparatus (Catalogue), 248
Olican, Kaye's, 194, 802
Oilfields, Texas, Hydrogen Sulphide Poisoning, 610
Old Colony Club, 115.
Oxygen-Jet Cutting Machines (Catalogue), 218
Paint Ingredients, Specifications, 579
Paint Manufacturers, British, Research Association, 526
Paint Materials, Standard, 45, 214
Paper Trade Directory, Phillips', 831
Personal, 12, 45, 107, 137, 168, 201, 231, 264, 296, 327, 354, 387, 443, 488, 508, 547, 571, 600, 642, 672, 694, 733, 757, 787, 816
Petrol Evaporation Losses, Prevention, 5
Petroleum Technologists Research Fund, 555
Photographic Chemicals (Catalogue), 248
Pipe Flanges, Standard, 741
Plywood (Catalogue), 372
Prepayment Meter (Catalogue), 59
Presses, Baling (Catalogue), 248, 372
Printing Machines (Catalogue), 185
Professional Classes Aid Council, 418
Public Works Congress Prizes, 175
Pumps, Air (Catalogue), 218
Pumps, Hand (Catalogue), 741
Pyrometers (Catalogue), 152, 218
Research, Bibliography on, 228
Roads Classification Scheme, 113
Road Rollers (Catalogue), 556
Roadmaking Machinery (Catalogues), 152, 741
Roadmaking and Repairing (Catalogue), 802
Rubber Machinery (Catalogue), 372
Safety First in Engineering Works, 327
Sandblasting Apparatus (Catalogue), 218
Sanitary Equipment (Catalogue), 218
Science and Invention, Popular Lectures, 494
Service, Record, with one Firm, 484
Shanghai Public Works Developments, 121
Shovels, Mechanical (Catalogue), 248
Slide Rule for Internal Measurements, 233
Soot Blowers (Catalogue), 185
Spiers, F. S. Proposed Memorial, 106
Stairs, Steel (Catalogue), 802
Statistics, Official, Guide to, 265
Stream Pollution by Acid, Mine Drainage, 419
Surveying and Drawing Instruments (Catalogues), 832
Tank Parts (Catalogue), 248
Teknisk Tidskrift, Special Number, 387
Temperature Recorders, Automatic (Catalogue), 185
Tenders, 12, 53, 77, 116, 136, 169, 200, 233, 265, 297, 327, 354, 387, 419, 449, 479, 513, 539, 571, 601, 641, 671, 694, 724, 757, 787, 817
Thermometers, General (Catalogue), 185, 218, 248
Timber Testing, Application of, *Errata*, 516
Transport, South East London Travelling Facilities, 297
United States Crude Petroleum Production, 569
Valves, All Iron (Catalogue), 494
Vizianagaram, Maharajah's College Journal, 252
Wagons, Trailer (Catalogue), 586
Washing Machine (Catalogue), 372
Water-Flow Meter (Catalogue), 248
Water-Screening Machines (Catalogue), 152
Welding, Gas, 788
Winches, Piling Hammer (Catalogue), 282
Wire, Coppered (Catalogue), 59
World Power Conference, Basle, 102

Motor Cars, &c. :

Brakes, Air, for Road Vehicles (Catalogue), 832
Cairo International Motor Show, 190
Coaches, Petrol-Electric (Catalogue), 556
Geneva International Motor Show, 190
Lorry, Motor, Trials in South Africa, 99
Motor Car Taxation, 97, 488
Pump, Air, for Tyres (Catalogue), 218
Road Plans, Pictoria, 419

Motor Cars, &c.—*continued.*

United States Motor Car and Petrol Industries, 77
Vehicles, Electric (Catalogue), 556
Vehicles, Motor (Catalogue), 185, 556

Naval :

Latvian Navy, New Construction, 364
Lisbon, New Naval Arsenal, 393
German Motor-Motorship "Barbara", 427
Temperature Insulation, High, American and British Practice, 571

Obituary. See GENERAL INDEX

Physics and Chemistry :

Chemical Works Plant (Catalogue), 464
Coal Dust, Fineness and Explosibility, 39
Collision of α Particles with Light Atoms, *Erratum*, 304
Duddell Medal Award, Physical Society, 832
Fuels, Liquid, Spontaneous Ignition of, 364
Nobel Prize for Physics, Award, 787
Oils, Paraffin-Base and Asphalt-Base, 418

Power Plants. See *Electricity*

Power Transmission :

Bearings, Ball, in Aeroplanes, 487
Bearings, Ball and Roller (Catalogues), 59, 741
Chains, Driving (Catalogue), 372
Gear Wheels, Fibre (Catalogue), 832
Gearing, Worm (Catalogues), 59, 741
Rope Driving, 231.
Shaft Couplings, Flexible (Catalogue), 185

Railways and Locomotives :

Boilers, Locomotive, &c., South Africa, Tenders, 12
China, Refrigerator Railway Cars, 694
Chinese Railways, Purchase of Materials, 218
City and South London Railway, New Tube Siding, Kennington, 327
Electric Railways (Catalogue), 556
German Locomotive Works, Russian Purchase, 701
Glasgow Locomotive Trades, 633
Great Western Railway, Special Train Log, 456
Harwich-Zeebrugge Train Ferry, 516
Light Railway Statistics, 787
Locomotive Chart, Sectional, 312
Locomotive, Electric Battery (Catalogue), 185
Locomotive, Express, High-Pressure Compound, *Addendum*, 231
Locomotives, Shunting (Catalogue), 741
London Tube Railways, Methods of Construction, 741
New Zealand Railways Magazine, 201
New Zealand Workshops, New, 106
Newcastle Collision, L. & N.E. Railway, 544
Railway Officials, Universal Directory, 136
Scotch Locomotive Contract, 478
Sierra Leone Railway Report, 657
Signalling, Railway (Catalogue), 91
Southern Railway, Re-Signalling, 825
Staff Census, Railway, 450
Swiss Railway Tunnel Accident, 556
Wagon Works, German Combine, 817

Schools. See *Education*.

Sewage and Drainage :

Rainham Drainage Proposal, 448
Uxbridge Drainage Scheme, 23
Zuyder Zee, Drainage of, 478

Ships and Shipbuilding :

"Accra," S.S., Trials, 437
Aden Port Statistics, 509
"Africstar," S.S., Trial Trip, 766
"Almeda," S.S., Launch of, 12
"Ambrosio," S.S., Trials, 137
"Anglo-Peruvian," S.S., Trials, 240
"Apapa," M.V., Launch, 304
"Beljeanne," M.S., Trial Trip, 326
"British Governor," Oil Tanker, Trials, 624
"British Inventor," Trial Trip, 233
Cardiff Contracts, 233
Cardiff Dock Pilotage, 233
Cardiff Shipping Values, 724
"Carronwater," Dredger, Launch, 357
"Chelsea," Motor Yacht, 103
Chinese Steam Launch Service, Min River, 232
"City of Bath," S.S., Trials, 8
"City of Oxford," S.S., 185, 757
Clyde Activities, 15, 45, 137, 169, 233, 297, 449, 571, 601, 633, 663, 694, 756, 787
"Dolius," M.S., Performances, 185
"Dominia," S.S., Cable Layer, Trials, 227
Dredgers (Catalogue), 741
"El Amir Farouq," S.S., Trials, 312
Electrically-Driven Passenger Ship, Large, 297
"Eros," M. Yacht, Trials, 175
"Firby," S.S., Trials, 15
"George Livesey," Steam Tug, 54
Harwich-Zeebrugge Train Ferry, 516
"Idomeneus," M.S., Trial Trip, 326
"Jolly Tar," M. Tug, Trials, 218
"Jylland," Motor Ship, 693
"Kenton," S.S., Launch, 662
"Koolinda," M.S., Launch, 335
"Leconte de Lisle," S.S., Trials, 249
"Llandaff Castle," Trial Trip, 741
Lloyd's Register, 1926, 27, 248
Lloyd's Register, Vessels Lost or Condemned, 817
Lloyd's Wreck Returns, 145, 327, 616
"London Mammoth," Floating Crane, Launch, 677
"Majestic," Water Tube Boilers of, *Erratum*, 37
"Mernoo," S.S., Launch, 327; Trials, 386
"Mingary," Motor Yacht, Trials, 25
Motors, Marine (Catalogue), 185
Motors, Oil, for Small Craft (Catalogue), 59
"Moyallon," S.S., Launch, 164
"Nidarnes," S.S., 419, 674

Ships and Shipbuilding—*continued.*

Oil Shipments through Panama Canal, 326
"Orestes," M.S., Trials, 149
"Otterpool," S.S., Trials, 210
Panama Canal Traffic, 249
Passenger Ship, Large, with Electric Transmission, 297
"Patella," M.S., Launch, 510
Pendeen Lighthouse Lamp, 655
"Plume," S.S., Launch, 23; Trials, 326
"Pulpit Point," S.S., 297, 510
"Rajula," S.S., Trial Trip, 816
Rangoon Port Statistics, 687
Repair Contracts, 419
"Rohna," S.S., 265, 769
Scotch Contracts, 137
Scotch Shipbuilding, 15, 45, 137, 169, 233, 297, 449, 571, 601, 633, 663, 694, 756, 787
"Sheringham," S.S., Trials, 578
Shipbuilding, Ellis Construction (Catalogue), 282
"Silverash," M.S., Trial Trips, 489
South Wales Docks, Night Work, 633
"Storsten," M.S., Trials, 288
"Stuartstar," S.S., Trial Trip, 517
"Sucre," S.S., Trial Trip, 169
Swedish Shipyard, Largest (Götaverken), 449
"Tacoma," S.S., Launch, 233
"Tolford," Dredger, Launch, 357
"Valsesia," S.S., Salvage Contract, 297, 387, 419, 539
"Vizagapatam," Hopper Dredger, Launch, 587
"Waiplata," S.S., Launch, 209
Wellington (N.Z.) Port Traffic, 464
Welsh Shipping Deals, 169
Wireless, Navigation by, 15

Societies. See *Technical, &c.*; *Trade, &c.*

Strikes. See *Trade Societies, &c.*

Technical Societies, &c. :

Aeronautical Engineers, Institution of, 62, 152, 510
Aeronautical Society, Royal, 125, 403, 479, 663, 747
Argentine Association of British Engineers, 633
Automobile Engineers, Institution of, 578, 633
Bituminous Coal Conference, Pittsburgh, 449, 584
Brickworks Managers, Institution of, 249
Chemical Engineers, Institution of, 74, 657
Chemical Industry, Society of, 721
Civil Engineers, Institution of, 488
Consulting Engineers, Association of, 14
Electrical Engineers, Institution of, 177, 662
Empire Mining and Metallurgical Congress, 265
Engineers and Shipbuilders in Scotland, Institution of, 807
Faraday House Old Students' Association, 443, 640
Faraday Society, 106
Finsbury Technical College Old Students, 487
Foundrymen, British, Institute of; Lancashire Branch, 15
Fuel Economy Engineers, Institution of, 479, 509
Fuel Technology, Institution of, 556
Gas Industry Conference, 478
Iron and Steel Institute, 107, 168, 788, 817
Junior Institution of Engineers, 178, 508, 539, 741, 802
Keighley Association of Engineers, 725
King's College Engineering Society, 60
Libraries, Special, and Information Bureaux, 201, 334
Marine Engineers, Institute of, 565
Mechanical Engineers, Institution of, 795
Metallurgical Societies, Midland, Co-ordinating Committee, 457
Metals, Institute of, 77, 165, 519
Meteorological Society, Royal, 787
Naval Architects, Institution of, 387, 547
Ordnance Mechanical Engineers, 178
Petroleum Technologists, Institution of, 555
Physical Society, 832
Production Engineers, Institution of, 633
Public Works, Road and Transport Congress, 175
Royal Institution, 556
Sanitary Institute, Royal, 357
Steam Boiler Users, Swiss Association of, 62
Structural Engineers, Institution of, 291, 485
Testing Materials, International Congress, 737
Transport, Institute of, 387, 449
Whitworth Society, 102
World Power Conference, Basle, 102

Telegraphy. See *Electricity*

Telephony. See *Electricity*

Tools. See *Machine and other Tools*

Trade Societies, &c. :

Amalgamation of Kindred Unions, Trades Congress Advocacy, 335
American Metal Trades, Mr. O'Connell on High Wages and Short Hours, 580
Anglo-Russian Miners' Committee Scheme, Mr. Cook's Proposal, 734
Appleton, W. A., on the Economics of the Mining Dispute, 658
Australian Government and Proposed 44-Hour Week, 293, 812
Australian Labour Unions and Piecework, 753
Australian T.U. Congress and Federal Referendum, 210
Barron, T., on Labour's Share of Control in Industry, 39
Belgium, Hours of Labour, 753
Benefits, Trade Union, Non-Financial, 210
Bevin, Mr., and the Importation of Foreign Coal, 16
Bishop Auckland Coal Pits, Unemployment Benefit Award, 580

Trade Societies, &c.—*continued.*

Bishop's Memorandum and the Miners, 177, 210
Blacksmiths' Forge, &c., Society and Reports, 74, 428, 734
Blastfurnacemen's Wages, 479
Boilermakers' Secretary on Demoralisation in the Union, 703
Boilermakers' Society Finance, 353, 783
Boilermakers' Society Reports, 116, 273, 353, 518, 703, 783
Boilermakers' Society and Superannuation Benefit, 273, 518, 783
Boot and Shoe Repair Trade, Outworkers' Piece Rates, 597
British Mannesmann Tube Company, Employees and Reduced Wages, 395
Browning, A., on Industrial Co-operation and Harmony, 428
Brownlie, Mr., on Competition in the Engineering Industry, 22
Building Trade Employers and Wage Demands, 22, 812
Building Trade Grading Committee and Claims, 812
Building Trade Operatives, Wages Agreement, Draft, 39, 73
Canada and U.S., Industrial Conditions Delegation, 210
Canadian Railwaymen's Wages Settlement, 734
Chicago Building Trades Agreement, 703
Civil Service Clerical Society, 488, 548
Civil Service Confederation and Bonus Super-cut, 703
Civil Servants and Affiliation to Outside Bodies, 210, 229, 353, 457, 548
Clynes, J. R., on Trade Union Benefits, 210
Coal Importation, Embargo Question, 116, 580
Coal Trimmers, Night Work Question, 633, 663, 817
Coal Trimming Committee and Tariff Reduction, 177, 293, 642, 658
Coal Trimming, Court of Inquiry, 395
College, London Labour, and the N.U.R., 597
Colliery Deputies, &c., and Unemployment Benefit, 488
Colliery Enginemen, &c., and Coal Mines Acts, 74
Commerce, Chambers of, and Industrial Unrest Legislation, 597
Communist Annual Congress, Leaders' Remarks, 518
Communists and Workers' Dictatorship, 597
Communism and Unionism, 354, 353, 812
Conciliation and Arbitration, League of Nations Conference, 783
Conciliation in Labour Disputes, Mr. R. Williams' Views, 487
Co-operation and Harmony in Industry, Mr. Browning's Views, 428
Cook, Mr., and the Proposed Miners' New International, 734
Cowen, J. E., on Payment by Results, 548
Cramp, C. T., on the General Strike, 273
Distributive and Shop Assistant Workers and Women Clerks, Proposed Organisation, 597
Dutch Labour Ministry and Prolongation of Working Hours, 457
Dutch Metal Workers, Reduction of Hours, 177
Easton Lodge, Labour College Scheme, 293, 580
Eight-Hour Day and International Labour Office, 518
Electrical Power Engineers and the General Strike, 335
Electrical Trades, Wages, 39, 488
Employment Exchanges, Labour Ministry Reports, 23, 39, 73, 116, 146, 177, 210, 229, 273, 293, 335, 354, 395, 428, 457, 488, 518, 548, 580, 597, 642, 658, 703, 734, 753, 783
Engineering Trade and the 20s. Increase, 73, 229, 273
Engineering Union and the Altered Constitution, 229, 642, 753
Engineering Union, Amalgamated, and Diesel Engine Repair Allowances, 488
Engineering Union, Amalgamated, District Wage Advances, 753
Engineering Union, Amalgamated, Finance, 116, 273, 783
Engineering Union, Amalgamated, and a 44-Hour Week, 23
Engineering Union, Amalgamated, and Foreign Competition, 22
Engineering Union, Amalgamated, and General Council Powers, 146
Engineering Union, Amalgamated, Goole Members on Strike Action, 73
Engineering Union, Amalgamated, London Area, Wages Demand, 116
Engineering Union, Amalgamated, Membership, 73, 229, 353, 488, 642, 753
Engineering Union, Amalgamated, on Trade Union Congress Powers, 22.
Engineering Union, Amalgamated, Unemployment Relief Question, 373, 488
Executives, National, Postponement of Conference, Union Hostility, 39
Factories, Regulation of Hours Proposals, 210
Factory Legislation (No. 2) Bill, Proposed Consolidation, 210
Federation, General, of Trades and General Strike Liabilities, 273
Federation, General of Trades, Reports, 22, 658
Federation, General of Trades, Sub-Committee on Unemployment Causes, 734
Flax and Hemp Trade Wages, Proposed Reduction, 457
Ford Motor Company's Five-day Week, 753
Foremen and Accident Prevention, 642
Forty-four Hour Week, Proposals, 146
France and Foreign Workmen, Conditions of Employment, 457
France, Hours of Labour, 753
French Blacksmiths, Eight-hour Day Provisions, 177
French Labour Agreement Statistics, 548

Trade Societies, &c.—*continued.*

French Workers' Annual Holidays Question, 293
Furnishing Trade Union and General Council Powers, 146
General Council of Trade Unions, Powers and Duties Question, 146, 273, 335
General Federation and General Strike Benefit, 74
General Federation and General Strike Liabilities, 273
General Federation of Trades, Reports, 22, 658
General Federation of Trades, Sub-Committee on Unemployment Causes, 734
General Strike, Blanesworthiness, 394
General Strike and Foreign Trade, 233
General Strikes, Futures, Communists' Suggestions, 518
General Strike, Mr. Cramp's Views, 273
General Strike, Mr. Pugh on the Theory of, 335
German Metalworkers' Union, School of Economics, 394
German Shipbuilding Yards, Hamburg Committee's Award, 642
Germany, Hours of Labour, 753
Germany and Protection of Workers, &c., 548, 703, 812
Germany, Unemployment and Restriction of Overtime, 812
Government and Strike Legislation Proposals, 488
Holidays, Workers', in France, Problems of, 293
Hours Bill, Miners', 22, 39
Hours' Convention, Geneva Debate, 548
Hours' Convention, Ratification Question, 783
Hours of Work in Australia, Proposed 44-Hour Week, 293, 812
Hours of Work in Japan, 488
Hours of Work in Russia, 293
Hungarian Metal Workers' Union and Government Hindrance, 335
Importation of Competing Goods, Trades Union Proposal, 353
Industrial Dispute Bill, 658
Industrial Dispute, League of Nations Conference, 783
Industrial Mission, British, to U.S., Work of, 753
Industrial Notes. See *Labour Notes* (below)
Industrial Situation, 116, 229, 394, 518, 658, 783
Industrialism in United States, New Orientation, 74
Insurance, Industrial, Suggested Nationalisation, 353
International Federation of Unions, Relief Funds for British Unions, 812
International Labour Organisation and Work Performed by Employers, 146
Ironworkers' Wages, 137, 419, 539
Italian Fascist Engineering Unions, Renunciation of Wages, 428
Italian Hours of Work, Influence on Dutch Industries, 457
Italian Labour Confederation on Working Hours and Wages, 395
Japan, Hours of Work Question, 488
Jute Trade, Minimum Wage Proposals, 394
Labour Conventions, International, Ratification, 518
Labour Ministry Reports, 23, 39, 73, 116, 146, 177, 210, 229 (2), 273, 293, 335, 354, 394, 395, 428, 457, 488, 518 (2), 548, 580, 597, 642, 658 (2), 703, 734, 753, 783 (2), 812
Labour Notes, 22, 39, 73, 116, 146, 177, 210, 229, 273, 293, 335, 353, 394, 428, 457, 487, 518, 548, 580, 597, 642, 658, 703, 734, 753, 783, 812
Labour Office, International, and Eight-Hour Day, 518
Labour Party Conference and Coal Dispute, 487
Labour Party Organisation and the Communist Conspiracy, 428
League of Nations' Conciliation and Arbitration Conference, 783
Levy, General, Difficulties Attending, 487
Liverpool Joiners and "Woco" Doors, 428
Locomotive Engineers and Shunting Turns, 457
London Engineering Trades Wages, Ballot for Strike, 39, 229
Louisiana, 48-Hour Week for Child Workers, 658
Machinists, American International, Agreements with Employers, 146, 273
Machinists, American International Association Reorganisation, 658
Machinists', International, Agreement with American Employers, 273
Machinists, International, and International Metalworkers, 548
Machinists', International, Retirement of President, 178
Metal Trades, American, Mr. O'Connell on High Wages and Short Hours, 580
Metal Workers, British International, Affiliations, 229
Metal Workers' Federation, International, and Americanisation of Industry, 580
Metal Workers, International, Affiliation of American Federation, 518, 548
Metal Workers, International, Unfavourable Continental Conditions, 229
Metal Workers, International, United States Affiliation Campaign, 353
Metalworkers' Union, German, School of Economics, 394
Mine Hours Bill, 22, 39
Mine Owners' Conditions of Employment under Hours Bill, 39
Miners' Break Away and the Federation, 548
Miners and Cabinet Coal Committee, 394, 428, 457
Miners' Executive's Proposals and Government Reply, 428
Miners' Federation and Church Leaders' Settlement Proposals, 177, 210
Miners' Federation Committee and Three Party Conference, 353

Trade Societies, &c.—*continued.*

Miners' Federation, Composition of Committee, 116
Miners' Federation, Delegate Conference, 428, 457, 487, 597, 703
Miners' Federation Executive Committee, Renewed Demands, 518
Miners' Federation, Hostility to Eight Hours Bill, 22
Miners' Federation and National Negotiations, 394, 580, 597, 642, 658
Miners' Federation, Sanction of Safety Men, 22
Miners' Federation, Unemployed Miners and the Dole, 753
Miners' Leaders, Criticism by Trade Union Council, 39
Miners' Leaders and T.U.C., Proposed Conference, 73
Miners, Open Agenda Conference Proposed, 548
Miners and Owner's, Conference Deadlock, 273
Miners, Proposed Levy for, Special Conference, 548, 580
Miners' Union, New, and Political Affiliations, 753
Mining Conference, Three-Party, Proposed, 335, 353
Mining Dispute, Church Intervention Proposals, 116, 177, 210
Mining Dispute, Delegate Conference and Negotiations, 229, 293
Mining Dispute, District Settlements, Principles, 597
Mining Dispute, Government Proposals, 394
Mining Dispute, Government Settlement Proposals, 642, 658
Mining Dispute, Local Agreements Proposals, 335, 353, 487
Mining Dispute, Mr. Appleton's Comments, 658
Mining Dispute, Mr. Cook's Manifesto, 703
Mining Dispute, Nottinghamshire Local Agreement, 658, 703
Mining Dispute, T.U.C. Intervention, 580
Mineworkers, Russian, Abuse of Overtime, 146
Mineworkers, Russian, Wages and Output, 146
Minority Movement, National, Conference Resolutions, 178, 293
Minority Movement and Trade Unionism, 353, 812
Moscow Communists and Production Conferences, 812
Municipal Workers', &c., Union, Finance, 703
Municipal Workers' National Union, Report, 293
Municipal Workers' and Plumbers' Unions and General Council Powers, 146
Netherlands Industries and Italian Hours of Work, 457
Norwegian Engineers and Shipowners, Holiday Agreement, 734
Painters, House, Lead Poisoning, Protection Bill, 757
Patternmakers' and Engineering and Shipbuilding Federation, 642
Patternmakers, United, Unemployment and the Miners, 353, 753

Trade Societies, &c.—*continued.*

Patternmakers, United, Unfavourable Financial Position, 229, 518
Payment by Results, Mr. J. E. Cowen's Views, 548
Piecework, Australian Labour Opposition, 753
Plasterers' Union and General Council Powers, 146
Polish Legislation, Proposed, for Employment of Workers, 734
Post Office Workers, Wages Claims, 812
Railway Benevolent Institution Report, 457
Railways, London Area, and Power House Wages, 73
Railway Shopmen, Unions and Provisional Agreement, 210, 293, 734
Railway Shopmen's Wages, &c., Staff and Unions Conference, 177
Railwaymen's Complaints *re* General Strike Settlement, 39, 73
Railwaymen and the Movement of Coal Question, 73
Railwaymen, National Union, Annual Meeting, 39
Railwaymen, National Union, Fusion Question, 457
Railwaymen, National Union, Guaranteed Week Question, 753, 783
Railwaymen, National Union, and Organisation of Shopmen, 23, 273
Railwaymen, National Union, Rejection of Suggested Levy, 428
Railwaymen, National Union, Restoration of Funds Levy, 812
Railwaymen and the New Wage Programme, 73
Red International, Russian Criticism, 229
Russia, Moscow Communists and Production Conferences, 812
Russia, Nominal Working Day and Overtime, 293
Russian Mineworkers, Abuse of Overtime, 146
Russian Mineworkers, Wages and Output, 146
Russian Textile Workers' Wages, 146
Russian Workers' Criticism of Moscow Methods, 229
Sailors' and Firemen and Foreign Coal Embargo, 548
Sailors and Firemen's Union and International Transport Federation, 146
Sailors' and Firemen's Union and Political Affiliations, 146, 177
Seamen, National Union, and Political Affiliations, 753
Ship Constructors', &c., Association, Economies, 703
Shipbuilding Employers' Federation, Chairman, 580
Shipbuilding Trades' Joint Council, Resumption, 488, 548
Shipbuilding Trades' New Agreement, Advantages, 734
Shipowners' Reduction of Coal Trimming Tariff, 177
Shipyard Labour, Interchangeability of Workers, 210, 428, 488
Shipyard Labour Questions and Foreign Conditions, 210
Shipyard Unions and Report of Committee, 39, 116, 210, 229, 273

Trade Societies, &c.—*continued.*

Shipyard Workers, Need for Better Timekeeping, 783
Shopmen, Railway, N.U.R. Agreement, 23, 273
Social Democratic Federation and Political Action, 177
South Wales Docks, Night-Work Question, 633, 663, 817
Southern Railway, Casuals and Overtime Rates, 597
Soviet Unions on General Strike, 116
Spanish Regulations for Protection of Daily Wage, &c., Workers, 178
Strike Law Amendment, Scarborough Conference Resolution, 488
Strikes and Lock-Outs, U.S.A., Suggested Measures of Prevention, 734
Strike Statistics 116, 229, 394, 518, 658, 783
Swansea Docks, Locomotive Men's Strike, 233
Swedish Industrial Unionism, Centralisation Question, 580
Textile Factory Workers and Government Bill, 293
Textile Workers' Conference, Stoppage of Work Policy, 273, 293
Textile Workers, Russian, Wages, 146
Thomas, J. H., N.U.R. Attack, 39
Tinplate Workers' Wages, 518
Trade Council Federations, Zone Scheme, 734
Trade Unions and the Borrowing Practice, 273
Trade Union Congress, Conference on General Strike Report, 734
Trades Union Congress and Importation of Competing Goods, 353
Trades Union Congress, Mr. Pugh's Address, 335
Trades Union Congress, New Chairman of General Council, 428
Trades Union Congress, New General Council, 353
Trades Union Congress, Nomination of Secretary, 39
Trades Union Congress, Resistance to Communism, 353, 812
Trades Union Congress, Resolutions for Discussion, 146
Trades Union Congress and Soviet Unions, Relationship Question, 812
Trades Union Congress and Washington Hours Convention, 812
Trade Union Council and the Miners' Leaders, Criticism, 39
Trade Union Finance, Payments to Officers, 273
Trade Union Resources during Depression, Administration, 812
Tramways Union and General Strike, 548
Transport and General Workers' Union, 116
Transport Workers' Federation, National, Conciliatory Tone, 23
Transport Workers' Union on the General Strike and the T.U.C., 812
Unemployment Benefit, Prosecutions for Fraud, 394
Unemployment Books, Analysis of Applications, for, 812
Unemployment Donations and Benefit, 1918-26, 703

Trade Societies, &c.—*continued.*

Unemployment, Labour Ministry Reports, 23, 39, 73, 116, 146, 177, 210, 229 (2), 273, 293, 335, 354, 394, 395, 428, 457, 488, 518, 548, 580, 597, 642, 658 (2), 703, 734, 753, 783 (2), 812
Unemployment Returns, Extended, Manufacturers' Request, 428
Union Amalgamation, Mr. Appleton on, 22
Unions, British, Statistical Tables, 703
Unions, Share in Control of Industry, 39
Unions, Trade, Relation of Contributions and Efficiency, 74
Unions Trade, Salary Question and Administration Costs, 177
United States and Canada, Industrial Conditions Delegation, 210
United States Industrial Methods, 753
United States Industrialism, New Orientation, 74
United States, Labour Federation and Shorter Week, 457
United States, Suggested Methods of Avoiding Strikes, &c., 734
United States, Railroad Company Unions and Independent Unions, 812
Wage Proposals at Trades Union Congress, 146
Wages, Fluctuation of, 116 (2), 229, 394, 518, 658, 783
Wages, Mr. Pugh on a Scientific Wage Policy, 335
Washington Hours Convention, Geneva Debate, 548
Washington Hours Convention, Ratification Question, 783
Wireless Operators, Marine, Status and Conditions Award, 177
Woodworkers and Builders, Approval of Woco Doors, 597
Workers, Individual, Proposed Anti-Victimisation Legislation, 597
Workmen's Compensation Acts, Trade Union Amendment Proposals, 335
Yorkshire Coal Owners and the Ratio of Proceeds Question, 39
Yorkshire Miners, Unemployment Benefit Question, 734

Trade. See *Coal ; Iron and Steel ; Ships and Shipbuilding ; Electricity ;* and *Industries*

Tramways :

Glasgow Corporation, Report, 113
Liverpool Corporation, 264
Shanghai, Trackless Trolley Cars, 246
Statistics, Great Britain, 787

Turbines. See *Engines and Boilers*

Universities. See *Education*

Vehicles. See *Motor Cars ; Railways*

Warships. See *Naval*

Waterworks, &c. :

Clay Cross Water Supply, 46
Liverpool Waterworks, 593
Rand Water Supply, Report, 74

LONDON:

Printed for the Proprietors by HARRISON & SONS, LTD., at the BEDFORD PRESS, 20 & 21, Bedfordbury, in the Parish of St. Martin's-in-the-Fields, and Published by CHARLES ROBERT JOHNSON, at the Offices of "ENGINEERING," 35 & 36, Bedford Street, in the Parish of St. Paul, Covent Garden, both in the County of Middlesex.—Friday, January 28, 1927.